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THE

AMERICAN FARMER.

"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." . . . . . *Virg.*

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Judge Fullerton on Farming in Virginia.

We are indebted to the Hon. William Fullerton for a copy of the address delivered by him before the Piedmont Agricultural Society, at Culpeper, Va., October 19, 1876, from which we make the following extracts. They will answer in some measure the queries of our correspondent P. A. B., in the July number of the *Farmer:*

Steps towards Improvement.

The amount annually lost in this State from too large farms, and the cultivation of too great a surface without remunerative returns, and the sale of whatever is so produced from the farms, without any return to the soil of the elements removed by the crops, is something alarming to contemplate. Such a reckless system would impoverish any land, however productive in its natural condition. And when I recommend the purchase of fertilizers, in order to insure large crops, it is not with a view of encouraging that system of tillage which removes everything from the farm which is produced upon it. Nothing but a truck farm, where vegetables are raised for city consumption, could warrant the expense of such husbandry.

The necessary steps towards an improved husbandry in this State are:

1. To cultivate less land.
2. To make that which is cultivated rich in plant food, so that it may produce large crops.
3. The practice of a rigid system of rotation of crops, and mixed farming.
4. The cultivation of the grasses and less of the cereals, and feeding upon the farm the most of its products.
5. Raising clover and enriching the land by turning under green crops.

I speak earnestly and sincerely when I say that I believe that the faithful practice of such a system of tillage would in ten years increase the value of real estate in Virginia 100 per cent., and place the farming population in an independent condition. There is nothing new in these suggestions. They are the same old, old story, oft repeated and often disregarded. They, nevertheless, employ the true policy for tillage, and the time will come when they will be universally adopted.

The advantage in small farms can scarcely be over-estimated. France is an eminent example of this, and she is to-day the wonder of the world. With a territory not equal to one-fifteenth of our States, and but little greater than Texas, she raises nearly double the wheat produced by the United States, and besides supporting a population of nearly forty millions, her exports the last year exceeded our own. This all arises out of the fact that her farms average less than sixty acres, and are made to produce to the full extent of their capacity.

All observation and experience go to show that those sections of the country are most prosperous where a mixed system of farming prevails. Not only a nation but a farm should be as near self-supporting as possible; and that mode of cultivation which comes nearest to accomplishing that object ensures the largest measure of success.

The farmer who finds in his own garners that which is needed to supply his daily wants is far removed from the vexations and losses attendant upon outside purchases which so severely tax his means. It is not unfrequently the case, when he produces but a single article for the market, that it commands a price which but poorly compensates him for his labor, while he has to pay exhorbitant prices for that which he is compelled to purchase. This is "selling the *hide* for a penny, and buying back the *tail* for a shilling," which surely is not a profitable transaction.

Mixed agriculture necessarily leads to a system of rotation of crops which is the key to successful farming. That there is a vast recuperative power in lands where a succession of different crops is grown no one can deny in the light of universal experience. Thousands of those who have hitherto devoted themselves to a single production, such as cotton, tobacco, or grain, now acknowledge their error.

Successive crops of the same character exhaust lands of the particular food they require, with great rapidity. The aid which nature so freely renders where crops rotate, is withheld in such a system of cultivation, because the farmer is violating her laws. To fight against nature is to war at fearful odds, and it is not difficult to forecast the result. To work in harmony with her, ensures a comparatively easy victory. One of the most beautiful of her provisions is that

while one crop exhausts the soil of that element which enters most largely into its composition, by the operation of some mysterious law, *it prepares that same soil for some other crop of a different character.* This is a very curious and interesting process of nature, which results immensely to our advantage if we accept her aid. As an illustration of this principle, we know that clover does not successfully follow itself, although it leaves the ground in the best possible condition for corn or wheat. One crop therefore restores in a measure what another has taken. By raising continuously the same plant you interefere with this beautiful contrivance of nature to rebuild her wasted strength. How this is done is imperfectly understood. We do know, however, that the deep-rooted plants, like clover, will pump from the depths below for the use of those that grow near the surface that food which has been carried beyond their reach. And not only that: this element when thus brought to the surface acts chemically upon what it finds there, and renders soluble and available as plant food what before was inert and resisted assimilation.

Nature, therefore, will do much of our work for us if we will only second her efforts, and give full scope to her beneficent laws. It is, therefore, a question for the farmer to determine whether he will, by a rotation of crops, have his soil enriched by drafts on nature's treasury, or draw entirely upon his own.

I do not mean to argue that there is nothing for the farmer to do but follow this system of rotation to make his lands productive. Far from it. But I do argue that he may make nature a co-worker with him in attaining a most desirable end. Change is a prominent feature in nature's economy. Cut down the forest of hard wood and the pines succeed. Again, remove the pines and the hard wood reappears. One kind of grass succeeds another and nature supplies the seed. These changes give the soil rest, to the end that the process of reinvigoration may go on. Day and night succeed each other, and each performs its particular function in promoting vegetable life. Eternal sunshine would result in eternal blight. The falling dew brings with it the nitrogen from the air to gladden vegetation. The sun appears; its light and heat liberate the acids and gases which enter upon their work of usefulness in preparing a variety of vegetable food.

Winter and Summer follow each other. Frost disintegrates and renders the earth porous, opening the way for the heat and moisture of Summer, so that chemical laws may work out their beautiful results.

Thus unceasingly, year after year, the silent agencies are at work preparing the earth for man's use, that it may bring forth abundantly of everything which was designed by a beneficent Creator for his support.

There can be no rational or successful rotation of crops, unless grass, including clover (and for all present purposes I shall treat clover as one of the grasses) holds a conspicuous place. *The great need of Virginia, to-day, is grass.* It is the great source of the world's wealth. I do not overrate its value as estimated at the present, or in ancient times.

In issuing the command which brought vegetable life into existence grass was first enumerated.

"And God said let the earth bring forth *grass*, the herb yielding seed and the fruit-tree yielding fruit after its kind."

"And the earth brought forth *grass*, and God saw that it was good."

This was before the creation of man or beast, and was designed to fit the earth for both.

Named first in the order of creation it stands among the first in importance to the human family. All history shows that no nation was ever agriculturally prosperous, that did not make it one of its chief products. Raising grass necessarily involves raising cattle, and you can measure the prosperity of any nation by the number of cattle within its borders. That kind of husbandry takes less from the soil than any other, and requires less labor to prosecute it.

Clover as a Restorer of Fertility.

But I must speak more particularly of clover. It is called and properly so "the sheet-anchor of American husbandry." Too much cannot be said in its praise. It is capable of doing more to bring your impoverished lands to a high state of cultivation with less expense than any one other agency. Its universal use as a restoring crop, would in a few years make Virginia as celebrated for her agriculture as she has ever been for her statesmen. And just in proportion as the farmer cultivates this plant will he be relieved from the necessity of purchasing commercial fertilizers to enrich his land. Whilst there is no system of cultivation which will enable the farmer to keep up the fertility of his land without resorting to such agencies, yet the use of clover will go very far towards accomplishing it.

A writer in one of the prominent farm journals, in speaking of clover, says:

"A few pounds of diminutive seed furnish machinery to absorb from the atmosphere and pump out of the earth the elements of fertility needed to replace what our wasteful and improvident predecessors have expended. I solemnly believe that in the benign providence of God, clover is to be the Moses which is to deliver Southern agriculturists from the bondage of poverty and debt by restoring our wasted and worn inheritance to its original fertility."

This language is not too strong. Clover does for the land what no other plant can. It is like the gleaner of old, it gathers up and makes useful what is lost.

Nitrogen in the form of nitric acid, one of the most important and expensive elements which enter into the growth of our crops, descends by the action of rains, so far into the soil as to be beyond the reach of ordinary plants. The roots of the clover plant are so many messengers to bring it back to the surface again.

The coral insect does not more effectually extract from the waters of the sea the material which enables it to construct the wrecking reef than does the clover plant seek out and garner plant food from earth and air for man's use. And then as if to indicate what great office it was designed to perform in the economy of nature, viz: to prepare the way for other life, it refuses to consume this ingathered nutriment, but dies and leaves it for the nourishment of succeeding crops.

It is this fact that has led farmers to say that their lands, where clover had grown in great luxuriance, but refused to grow longer, was *clover sick*. In other words it had performed its function, accomplished the great object of its life, and then, like the silk worm, died.

There is nothing truer in nature, than that the clover plant whilst drawing largely upon the richness of the soil for its own sustenance, leaves the earth far richer in plant food than it found it. And this marvellous feat is by a skill peculiarly its own, for the wit of man has never accomplished it. Science has for years been engaged in trying to discover some inexpensive method by which the nitrogen of the air could be forced into combination with other substances so as to be used in cultivating the earth. It has never been accomplished. That it will be I do not doubt, for it would be a bold man who would set a limit to man's discoveries. He that is successful in this field of experiment will be the world's benefactor, for he will have bestowed upon it a priceless boon. But what man has failed to do, the clover plant is constantly accomplishing. In your fields, where it is grown, this great helpmeet is silently but successfully toiling for your good. Earth and air yield alike to its influence and surrender their riches to its solicitations.

If, then, clover is the Moses to lead you out of the wilderness (and I agree with the writer from whom I have quoted this language) I beg of you let the figure drop there, and do not let it be forty years in accomplishing it. The promised land can be reached in a much shorter period. Pisgah will rise up at your bidding, the waters will divide to your approach, and you can pass over from leanness to plenty. Clover will do for you what miracles did for Moses. Yea, it will do more. It will cancel notes, pay mortgages, extinguish obligations, and bring abundance where there is now want.

And now, having condemned that system which permits what is raised on the farm to be sold from it, I beg leave to suggest other modes of getting an income from your labor. In doing so I must call attention to some facts which need no comment. You have easy and daily access to the cities of Alexandria, Washington and Baltimore, where there is found a ready market for everything your soil is capable of producing. *And yet the two former cities are supplied daily with the most of the cream which is used for domestic purposes, from distant counties in the State of New York.* And when you request the purchasers to take their supply from Virginia, they will do so only at a reduced price, for the alleged reason *that for the want of good pasture we cannot produce so good an article.* They think—and with some cause—that broom sedge will not make good cream. It is for this cause that our home markets are closed against us, and we are shut out from an industry that has made my native State rich.

Washington has also received the most of her supply of *hay* from the same source, and her *best butter* from New York and Philadelphia. This is a reflection upon our soil, which, though now deserved, it is needless to say will not long be submitted to. For it is capable of growing grasses as sweet as ever sprang from the earth, and in quantities to satisfy the most exacting. It follows that the aroma of our butter and cream may be such as to tickle the palate of the most fastidious. I sincerely trust that the day is not far distant when the order of things will be reversed, *and the place of demand and supply respectively changed.*

Neither does Virginia manufacture the cheese she consumes,—an industry which has enriched a great portion of the North, and for which the most of your State is well adapted.

Your short winters, and the consequent advantage you possess in fattening cattle and sheep for the market at a diminished expense, suggests a branch of business which other sections of the country, less favored than you, have made profitable. So far as these things are concerned, you should fear no rivalry. Corn, one of the most important crops in our country as a fat-producing food, finds a congenial soil in Virginia. Boast as they may of the products of the Western dairies, your lands will produce as much per acre as theirs under that treatment which you ought to give them.

The future glory and prosperity of Virginia

depends more upon the character of the men who shall cultivate her soil, than those who shall draw salaries from her treasury. Put intelligence upon the farm, and you will have distinction in the cabinet. A successful scientific agriculture infuses life and health in the whole body politic, and strengthens the arm of the State. Young men can make no more fatal mistake than to look upon farm labor as degrading. To till the soil is an honorable as well as a useful employment. The first command of the Almighty, after the creation of man, was, that he should "subdue" the earth. That command afterwards received its practical fulfilment when Adam was placed in the Garden of Eden with the Divine injunction "to dress and keep it." And as if this were not enough to dignify and ennoble the labor of the husbandman, we are told by the sacred historian that whilst "the heavens, earth and sea" were called into existence by a simple command, yet that "*The Lord planted* the Garden which Adam was commanded 'to dress and keep.'" The necessity for toil, therefore, is not, as has been so often alleged, a part of the curse consequent upon the fall,—for these events to which I allude were before the great transgression. The necessity for labor should therefore be regarded as a blessing. The Psalmist, in enumerating the evidences of God's goodness and wisdom, exclaims: "Man goeth forth unto his work and to his labor until the evening." Labor, therefore, should not be treated with contempt. Neither should farming be made so unattractive and repulsive as to drive young men to the large towns and cities to seek precarious livelihoods there. Is the country to lose not only their presence, but also their energies, their talents, and the benefit of their example? A remedy may be found for all this. Young men can and must be attracted to country life. That remedy is in the hands of the present generation. It is to make farming more attractive by making it more profitable and less laborious. If, instead of fields

covered with broom sedge, and scarred by deep, cavernous and unsightly gullies, capable of producing, under the treatment they receive, barely sufficient to pay the expense of cultivation, your sons could look upon rich, well-cultivated and productive farms, adorned with herds of well-bred cattle, barns bursting with the rich fruits of the harvest, they would cease to sigh for the city life and adventure. They then could see something ahead in their lives beside unrecompensed toil and griping poverty. I do not say they could accumulate great wealth, but I do affirm that they could surround themselves with the comforts and luxuries of life sufficient for a rational enjoyment.

What we want on the farm is that energy and enterprise which makes the successful merchant, that talent which makes the successful professional man, and that educated observation which enables men to unlock the secrets of nature, comprehend her laws, and appropriate her wealth. No other calling opens a wider field for investigation or a grander opportunity for useful experiment, which may benefit not only the individual but all mankind.

It is desirable to accumulate wealth, but it is still better to be useful. It is our privilege to be rich whilst it is our duty to be useful to our fellowmen. It is a hackneyed saying, that he who makes two blades of grass grow where but one grew before, is a public benefactor; and it is true. It illustrates that great want that everywhere exists for progress in the cultivation of the earth, and the willingness of the world to honor those who contribute to it.

Who deserves to be more honored than he who first discovered the constituent elements of vegetable life; or Lawes and Gilbert of England, and Ville of France, who have spent their lives in experimental farming for the good of mankind; or Johnson of our own country, who has written those wonderful books entitled "How Plants Grow" and "How Plants Feed?" And who will so effectually win fame as he who shall yet discover some practical method by which that coy constituent, composing ninety per cent. of the atmosphere, shall be wooed into an alliance with other objects, so as to be used in enriching the earth? Whose names more readily occur to us here to-day at this harvest festival, as objects of our gratitude, than Ruffin and Taylor, of our own State, who have left behind them as monuments of their usefulness the examples they set in improving agriculture? Had their admonitions been heeded, Virginia would have been to-day far in advance of her present condition; and while all may not expect to reach the same measure of usefulness, yet there is an opportunity for every one who tills an acre of soil to aid in bringing about a state of things which will remedy the evils which now exist.

It should be the object of every one, young and old, to co-operate in making Virginia more attractive than it is. The West, with all its boasted advantages, has no such claims on the favors of the young, nor does she present so many advantages to those seeking new homes; and yet when it is proposed to such that they turn their faces toward this State, they raise two objections which are difficult to answer:

First—That her lands are exhausted, and cannot be resuscitated except at a great expense.

Second—That her roads are neglected, and at times almost impassable.

For these reasons, hundreds of persons who otherwise would seek homes here are turned away.

It is in your power to remedy these things, and in doing so you will not only attract strangers from abroad, but you will make Virginia more attractive to your children at home. There is no more important object than this. Bind your sons to the soil by every means in your power. Overcome, if possible, any desire on their part to leave the country for city life. Let them compare the present condition of the tillers of the soil with that of the tradesman, and they will see that the advantage is largely with the husbandman.

Beets and Beet Sugar.

Messrs. D. Landreth & Son, Philadelphia, have published a pamphlet, on *The Value and Culture of Roots*, to which they add an appendix on the production of beets for sugar, which we give below. It will be of interest to our readers to know that Maine has offered a bounty for the production of sugar beets, and that our neighboring State of Delaware has, by her Legislature, made an appropriation and appointed a commission to expend it, for encouraging the growing of beets for sugar. The commission has offered premiums to the amount of $150 for the products containing the largest per centage of sugar.

Sugar is annually imported into the United States to the amount, we believe, of over $60,000,000, and though there may be some drawbacks and disasters, there can be little doubt that the time will come when the manufacture of beet sugar will become a paying industry in this country. Prof. Goessman has produced at the Massachusetts Agricultural College some very fine samples of sugar at a cost which would seem not to be an extravagant one, considering the facilities for its production.

ON BEET SUGAR.

The producer of cattle-feeding Roots must needs be somewhat familiar with the Sugar Beet and its uses, and so impressed are we with the prospective advantage of Beet Sugar manufacture in the United States, that the attention of the readers of this pamphlet is invited to the brief remarks we have to offer. We are now engaged in conducting some experiments on our farms in four different States, under distinct conditions of soil and climate, and hope to be able to present results which will certainly be interesting and possibly of practical value.

In Europe, the manufacture of Beet Sugar has stimulated agricultural enterprise to a wonderful extent, and is annually extending over

broader territory. In fifteen years it has increased fourfold. At first the governments of France and Germany paid bounties to the manufacturers, and in addition protected them by high tariff; now these same governments exact an internal revenue tax of from thirty-four to fifty-five dollars on every acre of roots grown; and in the face of this enormous tax, the farmers and manufacturers were never more prosperous.

The Beet Sugar made in Europe in 1875 amounted to 1,317,623 tons, a production equal to 61 per cent. of the cane sugar manufactured in the world. The internal revenue tax upon European Beet Sugar amounted in 1874–'5 to over 40,000,000 of dollars.

The production of Beet Sugar in France is 2,040 lbs. per acre. The amount of Cane Sugar produced in Louisiana is 1,904 lbs. per acre. The gross production of Louisiana in 1875 was only one-eighth of the amount of sugar consumed in the United States, the inhabitants of which consume twice as much per capita as those of any other country. Similar data to any extent can be furnished proving beyond cavil the profitableness of the Sugar Beet industry in Europe, and that a full demand can be found in our domestic markets for all that can be made.

The general improvements consequent on the manufacture of sugar are of inestimable advantage to the prosperity of any locality or country where it has been successfully pursued. The manufacture stimulates the production of other crops, as Beets can be grown to the best advantage only under a practical system of rotation of crops. The high manuring necessary in Beet culture results in bountiful harvests of intermediate crops. In addition, the processes of culture commencing in April and continuing till October, and those of manufacture lasting from October till April, make an increased demand for laborers, adding to the permanent population of the district, and the supply of whose increased wants brings prosperity to others,—thus completing the circle of social prosperity.

The fattening of cattle upon the cake or cellular residuum from the processes is exceedingly profitable, and stimulates the production of hay and grain—these being necessary adjuncts. The manure carefully saved, under the system of stall feeding, is returned to the lands from whence the roots were taken; and with judicious application of commercial manures the fertility of the soil is annually enhanced.

The processes of culture require improved agricultural implements; with these comes the closer observation of rural affairs, and thus the farmer is educated to habits of investigation, as well in agricultural chemistry as the general study of vegetable life.

Thus it may readily be perceived that the Beet Sugar industry is profitable to all concerned; all classes participate in the prosperity it creates and diffuses. No agricultural pursuit is so beneficial to the community where it is carried on—the producers and manufacturers dealing directly with each other.

At a County Agricultural Exhibition in France the following significant inscription was placed on a triumphal arch:

"Before the manufacture of Beet Sugar, the arrondissement of Valenciennes produced 695,750 bushels of wheat, and fattened 700 oxen. Since the manufacture of Beet Sugar was introduced, the arrondissement of Valenciennes produces 1,157,750 bushels of wheat and fattens 11,500 oxen."

In Beet Sugar districts the proprietors of the factories, as a rule, have some hundreds of acres under their own control, and purchase additional supplies of roots from their neighbors, at prices ranging from four to five dollars a ton. A factory costing ten thousand dollars in its equipment will work up, during the manufacturing season of six months, 100 acres of roots and afford employment for ten or twelve operatives. One costing fifty thousand dollars will employ fifty men and work up annually the roots grown upon 500 acres—the annual area in roots under a four-course rotation of 2,000 acres.

The root-grower can average twelve tons to the acre, often fifteen and over; the cost of production of which should not exceed forty dollars per acre on a most liberal allowance for rent of land, manure and labor. In Europe the leaves cut from the crop when harvested are preserved for months in air-tight under-ground chambers, and are relished by cattle when fed mixed with other food.

The pressed pulp sold by the manufacturers amounts to about 20 per cent. of the weight of the roots used. It is valued at $5 a ton as cattle food, and can be thoroughly preserved in underground vaults, or equally as well in deep trenches from which the air is excluded. This cake is looked upon as a highly valuable factor in the production of sugar; a sixty thousand dollar factory producing cake sufficient to feed 300 head of cattle during a period of six or seven months.

Fattening stock, it will thus be seen, becomes a prominent feature in all districts where the Beet Sugar industry is pursued; and with the new markets opened abroad to the almost limitless import of American beef this feature is of increased importance.

The cultivated Sugar Beet is pre-eminently a potash plant. This element must be liberally supplied to effect good results, and though other constituent parts are equally necessary they are more likely to be naturally present in the soil, and are only required in small proportions. The potash in the ash of Sugar Beets amounts to 48 per cent.—as much as all the other constituents united. Strong nitrogenous fertilizers, though forcing the roots to large development, are objectionable, as they are not conducive to a high percentage of saccharine. Saline substances do not so much retard the formation of saccharine matter as its complete extraction and crystallization; an excess of molasses is thus produced—an article less profitable than sugar.

Virgin soils and others rich in vegetable mould and saline constituents cannot be expected to produce beets adapted to sugar-making purposes. Such soils may grow gigantic roots, but they are not such as are most profitable, as the manufacturer pays the grower in proportion to the percentage of saccharine matter contained in the roots furnished. The sheet-anchors

of Agriculture must always be stable manure and green crops ploughed in. Commercial fertilizers are only supplementary, though invaluable when honestly made. Stable manure freshly applied is, however, prejudicial to the free formation of sugar, and in Germany is always applied to the crop preceding the beets. The application of manures must be regulated by the soil and rain-fall, as no fixed formula can be offered to suit all locations.

The aim of the grower of Beets for Sugar should be to secure by manuring and culture a root containing the highest percentage of saccharine matter, with the lowest percentage of salts and other foreign substances—the presence of such being an impediment to the complete extraction of the sugar. Sugar Beets to be profitable should contain not less than 12 per cent of saccharine, and by the scientific application of manures have been made to yield 18 per cent.

The specific gravity of the juice affords a satisfactory indication of the saccharine properties; if at 1.05 the saccharine amounts to over 13 per cent., from which 8.70 per cent. of the weight of the roots can be obtained in sugar.

The percentage of sugar extracted by the German manufacturer has annually been increasing from 6 per cent. in 1835 to 9 per cent. in 1875.

If the Beet Sugar industry can be successfully pursued in this country, so as to meet simply the *domestic demand* for sugar, the impetus to other interests would be, if not incalculable, at least difficult to estimate. In that event the area of land annually under cultivation in beet roots would be 1,000,000 acres. The machinery and buildings required would be of a value of 100,000,000 dollars. 2,000,000 tons of coal would be required by the factories, and 1,000,000 dollars worth of stable manure and other fertilizers annually purchased. No agricultural interest in Europe can be compared with it in rapidity of growth or in the advantages resulting from its pursuit.

That there can be found within the Union many sections where this industry may be profitably established admits of no question. Preliminary experiments are needed, and the first step is to grow roots, and closely observe the influence of soil, manure, and climate, and when the roots are in proper condition procure analysis of the juice.

If the roots can be produced by the farmer in quantities of twelve tons and over per acre, and sufficiently rich in saccharine matter, and the locality be favorable as respects fuel and an abundance of pure water for manufacturing purposes, the proper conditions exist, and capital is all that is required.

The co-operative system pursued in dairy districts would be quite as feasible in the manufacture of Beet Sugar.

—Buttermilk has healing qualities well known to most thrifty housewives. It is frequently used to heal ulcers. It is softening and soothing to the flesh and has certain cleansing qualities. The fresher it is the better.

Another Enterprising Virginia Farmer.

A friend in Maryland sends us the following account, from the *Virginia Patron*, of what is described as a model farm in Fauquier. Our correspondent says the description is not overcolored; that during the past winter Mr. Turner fed 100 head of horned cattle, large and small, on his home farm,—everything made being fed on the place. In the spring he sends the young stock to some mountain farms.

A few days since I visited the home farm of Mr. E. C. Turner, near The Plains Station, Manassas Gap Railroad, Fauquier county, Virginia. The farm contains two hundred and ninety acres, and is situated on the grade road leading from The Plains to Middleburg, in Loudoun county. We found Mr. Turner at home, and were received by his wife and himself in true Virginia style. Allow me to say just here, that nothing I can write will give a proper idea of the law, order and general beauty of this farm, or a just idea of the man who directs it. Mr. Turner is a farmer in every sense of the word. He has the brain to originate, ample means to execute, and faith in mother earth. The farm is divided into eight fields, neatly and substantially fenced. The fencing is principally a combination of stone and plank, made as follows: locust posts are set, as for an ordinary plank fence; a stone wall is built between and around them, about two and a half feet high and eighteen inches thick at the top; two wide plank are nailed on the posts; a narrow strip is nailed where the planks join. The upper part of the fence is neatly whitewashed. A person can form no idea of the beauty of this combination until seen, together with the rich green of the fields. When you take hold of a gate on this farm, you do so with perfect confidence that it will open, and in shutting that it will latch.

Mr. Turner's rotation begins with corn. A sod field is selected, and home-made manure is applied with a lavish hand. The manure is put where most needed; sometimes at the rate of 100 ox-cart loads per acre. This seems incredible, but Mr. Turner made during the past winter fifteen hundred loads of manure. Seeing is believing. The field is plowed to the depth of eight inches. Sharp-toothed harrows are next applied, and the field is harrowed and cross harrowed and torn all to pieces—"the more you harrow the better." The field is now ready for planting; rows are laid off four feet apart, and corn dropped at intervals of about eighteen inches, using one peck of seed per acre. No replanting is necessary, but a great deal of thinning, which Mr. Turner regards as beneficial, as pulling up the corn loosens the earth around the stalk which is left. In thinning, the stalks are left as near equi-distant as possible. Mr. Turner thinks it better to have one stalk every nine inches, rather than two eighteen inches apart. The first cultivation is to run around the corn with bull tongues, on single shovel stocks; using the single shovel to break out the middles. The next plowing is the same. In the last plowing a mould-board plow is used, the mould-board

next to the corn, throwing the dirt towards the corn. The middles are broken out with double shovels. This buries and kills the crab-grass between the corn. No hand hoeing is done. The Prolific is the corn used. The proprietor showed fine specimen of the seed, weighing over sixty pounds per bushel. There is always a good crop of corn made, and if Mr. Turner would compete, he could easily take the prize offered by the State Fair. Oats follow corn, and wheat seeded to grass, the oats. The fields are flushed for each crop. Bone is used liberally; and guano with wheat, which latter Mr. Turner thinks ripens and gives weight to the wheat. Lancaster wheat is sown, as best adapted to grass seeding. Clover and timothy are the grasses used. The land lays in grass five years, and is then put again in cultivation.

On the farm are two fine barns conveniently situated and suitably arranged; and, strange to say, the barns are neatly painted. In the larger barn the threshing machine, mills for grinding corn meal, horse feed, corn-sheller, fan, etc., are situated—all worked by horse power. This sort of work is done in bad weather. In the smaller barn are the cattle scales. The sheep are housed here, and hay stored.

The cattle are wintered in the barn-yards, and are fed on corn, fodder and hay; straw is used for bedding. Here, then, is the secret of the manure making. Forty stock cattle were wintered on this farm. On the 31st of October, 1876, the average weight of the cattle was 880 lbs.; on the 23d of April, 972 lbs., a gain of 92 lbs. The cattle were not fed until 27th of November.

Mowers, reapers and the horse rake are used, but the drill has been discarded. Wheat and oats are sown broadcast by hand. The lot is always devoted to broadcast corn.

Mr. Turner has in successful operation a system of farm labor which should be universally adopted. He has a number of tenant houses, which he lets to the hands, furnishing them so much provisions, wood, etc., and paying so much money. The hands have their own cooking, etc., done, and bring their dinners with them to work. This system saves much care and anxiety to the good wife—"seed time and harvest, summer and winter," are all one to her. Mr. Turner believes in under-draining. The eight-field system is in practice on all Mr. Turner's farms, and his neighbors are adopting it.

Prosperity in Georgia.

Georgia has for many years borne the title of the "*Empire State of the South*," which she has earned by the earnest manner in which she had entered upon the system of manufacturing the raw materials which she raised upon her own soil. Her population has ever shown itself energetic, and her agriculturists are probably unexcelled for their intelligence and practical efforts in the progressive system which the light of science is shedding upon their pathway. In ante-bellum times, we remember, no other State so largely entered into the trial of the guanoes which were introduced among the farmers of the country, as Georgia, and she is now using more extensively of the most approved fertilizers of the day than any of her sisters. We have in former numbers shown the wisdom of her course in the establishment of a system of protection to her farmers in the purchase of those materials supplying them with plant-food, by which they are saved from imposition in the sale of worthless articles, whereby they are liable not only to lose the money expended, but, what is still worse, the fruit of the labors of a whole season, by the failure of their crops.

We are prompted to allude to the prospects of this State by reading in the Columbus *Enquirer* an account of a trip which the editor had just made to Middle Georgia, and which, he adds, is the general tone of the press of the State, universally exhibiting the improved condition of our Southland, and the promise of generous crops. He says:

"Never has Georgia been more bountifully blessed. The yield of wheat, oats and other small grain is unprecedented. In all Middle Georgia the wheat harvest has been plenteous, and the steam threshers are as busy as they can be. The acreage was very large, and the product is equal to that of the West. These threshers will clean, count and empty into bags probably seven hundred bushels of wheat per day, and require one-tenth as tollage, and they are kept running the live-long day and far in the night. Corn is looking splendidly. With a few rains in the next two weeks the crop will simply be enormous, and Georgia will have to buy no bread. Fruit ladens the trees, and every variety is abundant. From Macon hundreds of bushels of peaches are being shipped daily to the North. Cotton, though small, is clean and appears healthy, and is rapidly growing. Alabama shows the same condition. If prosperous seasons continue, thanks to a kind Providence, the South will be placed on an excellent pecuniary basis, and once more prepared to commence the assumacy of the proud position she once occupied among the wealthy and stable of earth. It does seem providential that the year which has first witnessed the removal of political chains should also bring the blessings of glorious harvests and returning prosperity. There must be a Divinity that shapes our ends in mercy and wisdom, for after the many hard years of toil and privation the beautiful bow of promise spans the horizon with glowing colors."

North Carolina Farm Report.

From Commissioner Polk, of North Carolina, we have received his crop report for June, from which we gather that a most gratifying improvement in the condition of all growing crops is being shown, and the farmers are encouraged by

the prospect of an abundant reward for their labors.

Seldom, if ever, has there been a better wheat crop produced in the State,—generally there being an increased average, and also yield per acre, and the quality very superior. Drills, reapers, rakes and improved threshers are beginning to occupy their places on the best regulated farms.

Cotton looks favorable; and although the unusually severe winter damaged the fall-sown Oats, and the May drought cut the yield short, the increased acreage may compensate for it in the aggregate. The commissioner recommends to the attention of farmers the variety of red rust-proof Oats, which is being raised by many with entire satisfaction.

The transplanting of tobacco was held back till June in most counties, yet the plants, with favorable seasons, have started well and promise a full crop. There has been an increased acreage and more fertilizers devoted to it, and its average is reported at 118.

The farmers are becoming much interested in forage crops, and the German or Golden millet has been tried with great satisfaction in many sections.

The use of fertilizers is gradually diminishing, and what is used is confined to counties raising cotton and tobacco. [This is different from the result in Georgia, where there has been an increase of fertilizers, and lower prices and better qualities have been the result from what we think the wiser measures adopted in that State. The taxation imposed in the old North State will thus be found to have acted disadvantageously to the farming interest.]

Culture of Wheat and Tobacco in Pennsylvania.

In the *Lancaster Farmer*, in the proceedings of the County Agricultural and Tobacco-growers' Society, we find the following discussions:

WHEAT.

Mr. M. D. Kendig, from a committee appointed to experiment and report which is the best variety of wheat, and what is the proper quantity of seed to be sown per acre, reported that he had sown side by side in the same field a strip of Fultz and a strip of Clauson wheat, and he brought for examination a bunch of heads from each variety, plucked at the same time, which showed that the Fultz variety matured much more rapidly than the other, that it contained a greater number of grains to the head, but that the grains were by no means so large as the Clauson. He had sown from one bushel to one bushel and a half of Fultz wheat to the acre, and his observation was that one bushel is quite enough where the land is fertile. In thin soil more may be required, but not in soil where the land contains a sufficient quantity of vegetable mould. He preferred the Clauson to the Fultz, though the first named is considerably later.

P. S. Reist agreed that one bushel of seed was enough to sow, unless the sower calculates that some of the seed is to fall by the wayside, or among thorns and brambles. He had known good farmers, however, who sowed a bushel and a half or two bushels with good result.

Henry Kurtz was in favor of light seeding, as the straw would then be stronger and the wheat less likely to lodge. He had sowed last fall as much as two bushels of amber wheat to the acre, but he was satisfied this was too much unless the soil was very thin. He thought 60 pounds of seed to the acre too little, and two bushels too much, unless the seed was very large. We should endeavor to find out just what is the right quantity between these extremes.

W. J. Kafroth said that the farmers of West Earl sowed two bushels of wheat to the acre, and there was as good a crop in that section as anywhere else in the county. He would not sow a less amount of seed.

P. S. Reist said there was on an average 36,000 grains of wheat to the bushel, and that is enough for an acre. If the grains are small there are, of course, more of them in a bushel and a less bulk should be sown. If the grains are large there are a less number in a bushel and a greater bulk should be sown.

Mr. Kendig remarked that when he recommended a bushel of seed to the acre he referred to the Fultz wheat. A larger-grained wheat would require a greater weight of seed.

H. M. Engle said the question of the proper quantity of seed would never be settled among farmers, each of whom had his own opinion in the matter, and would be governed by his own experience. His own opinion was that farmers used too much seed. The English agriculturists are in advance of us in grain-growing, and they raise as large crops as we do, by sowing three pecks of seed to the acre. Mr. Engle himself would never sow more than a bushel and a half of any kind of grain to the acre; but no rule can be laid down. We must use our best judgment and be guided by our own experience. His own experience was that where he sowed the seed heaviest last fall his crop was the lightest this summer.

Levi W. Groff having been requested to state his mode of cultivating wheat, said he drilled it in rows several inches apart. This he did by changing his wheat drill so that it had but four instead of the usual eight seed-spouts. He had shovels so arranged as to scatter the seed in each drill to the width of about four inches, instead of allowing it to lie in a straight line, as is usually done. After the wheat is well up he cultivates it with the shovels attached to the wheat drill, the shovels being passed between the rows of wheat the same as the cultivator is passed between the rows of corn. He had no difficulty in getting the mules to walk between the rows of wheat. They seldom tramped it any, and if they did it would do but little harm. He was certain by his mode of cultivation that he could raise at least six bushels more wheat per acre than by the old plan.

D. G. Swartz said that if Mr. Groff could do as he said he could do, his mode of cultivating wheat was certainly a great discovery. If the man who caused two blades of grass to grow where only one grew before was a public bene-

factor, how much more a benefactor was the man who could add six bushels of wheat to each acre grown.

Mr. Kurtz said that Mr. Heiges, of York, had for some years cultivated his wheat, and had last year grown twice as much per acre as by the old method.

Levi S. Reist said that though the cultivation of wheat was a new thing in Lancaster county, it was old in some other parts of the world. In Japan they cultivate wheat just as we do corn or other vegetables.

Mr. Engle said all plants are improved by cultivation, and wheat is no exception to this rule. It will pay the farmer to cultivate it. He illustrated the advantages of even rough cultivation by telling of a farmer who had thoughtlessly left his harrow in the wheat field after the seed had been harrowed down in the fall, and, not wanting the harrow, allowed it to remain there all winter. Late in the spring he sent a boy for the harrow, and the lad dragged it from one end of the field to the other over the young wheat. His master was almost tempted to flog him for doing so, but the wheat that had been thus rudely treated at once took a fresh growth, and was soon ahead of that in any other part of the field, and it continued in this condition to the time it was harvested—the part over which the harrow had passed being distinctly marked by its superiority.

P. S. Reist suggested that the averages of our crops as at present established are too low. He suggested that they be raised to the following figures: Hay two tons per acre; wheat 40 bus.; oats 60 or 70 bushels; corn 80 to 100 bushels. He moved that a committee be appointed to consider the proposition and report to the society.

Mr. Engle moved to amend by adding that a premium be offered to the farmer who raises the largest crop on a given area, the area to be specified by the committee.

TOBACCO.

"What is the best method of cultivating tobacco from the first working up to finishing? What machines and utensils are best adapted for use in the tobacco lands known?"

Henry Shiffner said the best method is to cultivate constantly. As soon as the young plant has taken root, commence using the hoe and continue using it. Cultivate deeply with the harrow as long as you can walk between the rows; keep the ground constantly loose about the roots of the plant. Tobacco will not grow well in hard ground; it is a "rooty" plant and must have room to spread.

P. S. Reist, Webster L. Hershey, Washington L. Hershey, Levi S. Reist and President M. D. Kendig united in declaring that constant cultivation with both hoe and harrow, "weeds or no weeds," was the true principle. Let the harrow follow the harrow, that the ground may be constantly kept mellow and loose. Every alternate day is not too often to go through the field with the hoe, if time can be spared to do it. No matter if a few good leaves are tramped down; better ones will grow and take their places.

The question—"Does the growing of tobacco exhaust our soils so as to affect other crops?" was next taken up and discussed at some length.

Mr. Yeager said he had not had much experience, but as far as his experience went, tobacco exhausted the soil much less than some other crops. He believed if two pieces of ground of equal fertility were planted, one in tobacco and the other in potatoes, that the ground in which the tobacco was grown would be found in better condition in the fall than that in which the potatoes were grown. He believed that any crop that was allowed to grow until the seed matures—as wheat, oats, corn and potatoes,—will exhaust the soil much more than tobacco, which is cut off green, and the roots of which, if allowed to rot in the ground, make a good fertilizer.

Washington L. Hershey agreed with Mr. Yeager, and added that tobacco stalks cut up into small pieces and composted, make an excellent manure. He has now on his manure pile the stalks from ten acres of tobacco and finds that they ferment easily, and that there is no more trouble in composting them than corn-stalks, straw or other vegetable matter.

President Kendig agreed with Messrs. Yeager and Hershey. He had planted tobacco and potatoes side by side in the same field; used the same kind of manure, and gave both crops equal care and attention; and he found that the succeeding crop of wheat was decidedly better on that part in which the tobacco was grown. He cuts his tobacco stalks into short pieces and plows them under. He would much rather have a tenant put tobacco into his land than potatoes, as the latter will exhaust it more rapidly.

John Brady, of Millersville, took the same view. It had long ago been said that if we keep on raising tobacco we will ruin our land; and yet we find that our farms are every year getting better. He believed this was owing to tobacco farming. Last fall his boys piled some tobacco stalks around the butts of fruit trees to protect. This spring he pulled from under the tree grass that was fifteen inches in length; while a little distance off, where there were no tobacco stalks, the grass was only two or three inches long. He believes tobacco stalks to be among the best of fertilizers. His neighbor, Mr. Warfel, uses on his tobacco ground two hundred bushels of lime per acre, plows it down in the fall and manures in the spring. His tobacco this year is very fine, and his wheat in that part of the field in which there was tobacco last year is decidedly better than elsewhere.

W. L. Hershey said he had last year a tract of land planted in tobacco, potatoes and corn, all of which received the same kind of manure and equal attention. This year it is planted in wheat, and the crop looks better in that part which was planted in tobacco than in that which was planted in potatoes, and better in the potato land than the corn land.

Domestic Super-Phosphates.

In our last we gave a recipe from a Baltimore chemist for making a fertilizer which had been tried and found efficient. The following from the *Scientific Farmer* we may have published before, but as it is now in season we present it

to our readers. While this may do for making the bones on the place available, as a general rule, however, we doubt whether the most of farmers would not more economically supply themselves from the regular manufacturers, provided they get their supplies from a reliable source:

There is, says our cotemporary, a cheap and efficient method at the hand of every farmer for utilizing refuse bones, or for making super-phosphate of bone-black, etc. The action of decomposing organic matter on bones is to break down their structure and render their phosphoric acid soluble, and to change the form of their organic portion so that the nitrogen in it is converted into forms readily available for plant food. This fact can be utilized with great comparative profit, and has been made use of successfully by quite a number of intelligent farmers. The process in practice is as follows: Reduce the bones to as fine a condition as convenient; the finer the quicker will satisfactory results be obtained. Mix them with three to four times as much stable manure; horse manure preferred. Have the pile beneath a shed to prevent washing, but keep it moist by frequent waterings—with urine from the stables if convenient—to keep up the heating of the mass, and to assist in the chemical processes as a solvent. If the heat is very great and ammonia is noticed escaping, scatter a thin layer of earth or plaster over the heap. An occasional shoveling over, say two or three times in the course of the time occupied, will be beneficial in thoroughly mixing the ingredients and hastening the decomposition. In from two to six months, according to the fineness of the bones at first, and the care and attention given during the time, the bones will be entirely decomposed, and the phosphoric acid reduced to the soluble form.

The same method is equally good for horn scrapings, wool waste, and other matters of a like nature which decompose with difficulty. An intelligent farmer of Franklin, Mass., made a compost of stable manure, wool waste and bone black (burned bone.) After two months a sample was sent to Prof. Goessman, who found that about one-half of the phosphoric acid had been rendered soluble. In two months more, under similar conditions, it is not too much to expect that half as much more would be added to this amount. At the end of this period the nitrogen of the wool waste, through decomposition of the latter, will be set free and changed to an available form. When composting bones and stable manure, an addition of ashes to the mixture will be beneficial, both in furnishing needed potash to the resulting manure and in hastening the process of decomposition. Thus a complete manure will be produced, good for any crop.

THE SILK ASSOCIATION OF AMERICA, at its annual meeting, elected Frank W. Cheney, of Hartford, Conn., president; Jno. N. Stearns, N. Y., treasurer; and Franklin Allen, 93 Duane street, N. Y., secretary. The total products of silk manufacture in the United States for 1876 were 1,282,860 lbs., valued at $26,593,103.

Lobos (Peruvian) Guano.

Messrs. Hobson, Hurtado & Co., the agents of the Peruvian government in New York, have issued a circular on the use of Lobos guano on wheat, from which we take the following:

Many farmers are under the impression that Lobos guano and Peruvian guano are not the same thing. This is an error, and it no doubt arises from the fact, that many other fertilizers which do not come from Peru, and which therefore have no right to be so called, are also designated by the name of guano. But these are manufactured articles, prepared by mixing ingredients of more or less value for manuring purposes; while Lobos guano is a natural product found at the Lobos Islands, off the coast of Peru, just like Chincha and Guanape guano were found on the neighboring islands, known by those names.

As all Peruvian guanos have the same origin, viz: the accumulation of the excreta and carcasses of marine birds and seals, the nature of the substances of which they are composed, and their fertilizing properties, should in all instances be the same. And such is found, by chemical analysis and experience, to be the case, with this exception however: that owing to differences of climate between one locality and another, in Peru, the organic matter in the guano has in some deposits been partially decomposed, suffering a loss of ammonia; and, as a natural consequence, the guano has thereby become richer in phosphoric acid and potassa.

Lobos guano, which belongs to the last mentioned class, contains, on an average, 6 per cent. of ammonia, from 15 to 20 per cent. of phosphoric acid, and from 3 to 5 per cent. of potassa. It is therefore much richer in the two last named ingredients than either Chincha or Guanape guano, and is undoubtedly a highly concentrated manure.

Wheat requires a large proportion of ammonia in the soil, in order to succeed well. For spring wheat, a highly ammoniated grade of guano should be resorted to; but, we are of opinion that it is not equally judicious to use such guano, for winter wheat, at the time of sowing; and we recommend that, for this purpose, preference be given to the Lobos, for the reasons we shall proceed to state:

A considerable portion of the ammonia in Peruvian guano is in a form soluble in water. This is the case to a greater extent, according as the grade in ammonia be higher. Now, when guano is used for manuring winter wheat, it is put in the ground, say in September or October, and there remains without being taken up by the wheat-plant until the following spring. The consequence is, that the ammonia and ammoniacal salts, which may be set free during the intervening winter months, either escape in the air or are carried beyond the reach of the roots by water percolating through the soil, from the melting snow, or rain. Therefore, when spring arrives and the wheat requires most food, the guano, if originally of a high grade, will be in the form of Lobos guano: that is to say, it will have lost a part of its ammonia.

Hence, instead of manuring winter wheat, at seeding time, with a high-grade guano, it is evi-

dently preferable to use Lobos; which, besides the advantage of being cheaper than the higher grades, contains a larger quantity of phosphates and alkaline salts. When so used it will give a vigorous start to the crop; and to supply additional ammonia, which the wheat plant will require to fully develop, a top-dressing with standard (or better still, with rectified) guano, should be given in the spring, when the wheat is from 6 to 8 inches out of ground.

We advise that 200 pounds of Lobos guano per acre be applied by the drill or broadcast, at the time of sowing the wheat.

In March or April, according as the season be advanced or late, top-dress, using 100 pounds of high-grade rectified guano, per acre, applied broadcast. If the wheat is to be followed by grass or clover, the guano may be applied together with the grass or clover seed.

Land so treated should give an increase of from 20 to 25 bushels of wheat, per acre, in excess of what it would yield without manuring.*

The cost of the guano required per acre would be, at retail prices:

200 lbs. Lobos, applied with the seed	$4 55
100 lbs. rectified, applied broadcast in spring	3 45
Total	$8 00

Land thus manured for wheat would remain in fair condition to be followed by grass.

In advising farmers to employ the above-described method of using guano for wheat, let it be understood that we are not proposing an experiment; we are simply recommending a system now largely practiced in Europe with excellent results, and there is no doubt that it would answer equally well if tried in this country.

*On lands deficient in potassa or lime, these ingredients should be added, or the crop will be comparatively poor. For such cases we recommend that, some time previous to sowing the wheat, a mixture of 200 pounds of finely-ground plaster and 100 pounds of high-grade muriate of potash, (80 per cent. standard,) be applied per acre, broadcast, and afterwards lightly harrowed in. The cost of the ingredients to make this mixture would be from $3.50 to $4.00.

Improving Land by Bone Dust.

Our own opinion, based upon practical experience and observation of the value of bone earth, is well known to our readers, and the following facts from a well-known writer and farmer, which we find in the *Southern Planter*, corroborates all we have given upon the subject:

"About ten years ago a gentleman in Cecil county, Maryland, at the head of the Chesapeake bay, bought a tract of land—quantity unknown, but not less than 200 acres—for which he paid $20 per acre. The land was rolling, covered with bushes, brush, oak saplings, not larger than hogshead hoop-poles, with not an acre of cleared land on it. He cleared it up, and sowing 1,000 lbs. bone to the acre, planted it in corn. The corn was followed by wheat and timothy with 500 lbs. of bone additional per acre. The wheat was harvested by the purchaser. But the following spring, before the grass was cut, he sold the land at $100 per acre. The seller estimated that the crop of corn and wheat paid for the bone and the expense of clearing the land and working the crops. If so, the profit in three years on the land was $80 per acre, or 400 per cent.

Since the present owner has had the land he has applied to it only the domestic manures and thirty bushels of lime per acre. There has been no occasion to apply anything else, because the land was "made" by the bone. What the bone cost I do not know; nor is it material to state, for against such results any one may state what expense account he pleases.

Let the reader bear in mind that in the last number of the *Planter* I stated that land, thus improved by a sufficient quantity of good bone and put in grass, was worth intrinsically $100 per acre. Here we see that the land thus improved *sold* at $100 per acre; and then let the reader reflect if it be not far wiser thus to improve a smaller area than to put a homœopathic dose over the whole farm; to make, if his land is worth $20, 400 per cent.; if $10, then 900 per cent. in three years. FRANK G. RUFFIN."

Fertilizers in England.

Dr. A. Vœlcker, the distinguished Chemist to the Royal Agricultural Society of England, in his report for 1876, says only two samples of potash salts were sent to him for examination during the past season,—a fact which appears to indicate that potash salts are not used extensively in England for agricultural purposes. "The fact is," he adds, "potash salts have not been found in England to confirm the high expectations as to their fertilizing value which were entertained of them at one time."

On the other hand, nitrate of soda is growing more and more in favor with agriculturists. In consequence of this as many as 61 samples were sent for analysis—a larger number than in any previous year,—and none of them were found fraudulently adulterated.

The former supplies of Peruvian guano from the Guanape and Macabi Islands, containing on an average about 12 per cent. of ammonia, being exhausted, the deposits in the south of Peru are now being shipped from Pabillon de Pica, Independencia, and the Lobos Islands.

The first-named consists of three varieties, namely: 1, Pabillon; 2, Huanillos; 3, Punta de Lobos. These deposits are dry, powdery and fine guanoes, greatly superior to Guanape and Macabi guanoes.

Five samples of Pabillon guano showed the following composition:

	1.	2.	3.	4.	5.
Moisture	13.90	8.63	9.93	14.28	11.80
Organic matter, &c., equal to ammonia	11.91	9.96	10.31	10.78	10.36
Phosphate of lime	36.65	25.97	24.98	28.51	28.80
Alkaline salts	12.63	18.29	19.47	12.87	14.99

The Huanillos guano, as analyzed, contained as a rule somewhat less ammonia, more soluble phosphoric acid, and generally more moisture than Pabillon guanoes.

Four samples gave the following results:

	1.	2.	3.	4.
Moisture	22.41	15.60	17.60	16.35
Organic matter, &c. equal to ammonia.	9.28	9.78	9.54	9.11
Phosphate of lime..	24.15	26.31	23.95	24.85
Alkaline salts	17.59	14.05	17.59	17.42

The Puntas de Lobos guanoes, it will be seen, were poorer in ammonia, but richer in phosphates than Pabillon and Huanillos guanoes.

Four samples showed:

	1.	2.	3.	4.
Moisture	7.67	8.71	7.97	8.09
Organic matter, &c. equal to ammonia.	7.14	8.25	7.35	6.18
Phosphate of lime..	38.55	30.31	33.49	41.48
Alkaline salts	19.89	21.65	22.28	17.65

The guanoes from Independencia Bay were very dry, and nearly as rich in ammonia as the Pabillon deposit, but they were weak in phosphates, and contained a good deal of sand.

The following shows the composition so far as the ingredients named go of four samples:

	1.	2.	3.	4.
Moisture	8.17	8.18	9.74	8.68
Organic matter, &c. equal to ammonia.	9.27	9.79	8.90	10.36
Phosphate of lime..	21.92	19.85	20.26	18.50
Alkaline salts	14.73	13.29	13.33	13.21

Cargoes have been brought from two islands bearing the name of Lobos Island,—one being Lobos de Afuera, and the other Lobos de Tierra. These samples were poor in ammonia and rich in phosphates. Their constitution is shown below:

	1.	2.	3.	4.
Moisture	21.19	21.79	24.95	11.90
Organic matter, &c. equal to ammonia.	4.22	4.46	4.94	3.60
Phosphate of lime..	42.07	40.24	37.10	50.97
Alkaline salts	11.46	11.52	8.76	11.93

Prof. Voelcker has had his attention directed to the recent importations of Ichaboe and Saldanhay Bay guanoes. One of the owners of the former informs him that he and his partners came into possession of these islands soon after the large deposits were removed in 1843, and after several parties had shipped the refuse guanoes in 1849, and finding it worthless, sold their rights to export the guano.

At first there was hardly a bird to be seen on these islands; but by protection at the breeding season, in the course of twenty-three years the birds have multiplied to such an extent that they are now obliged to settle on adjacent islands. The birds remain on these islands about nine months. They begin to lay as soon as sufficient dung has accumulated to serve as nests for the eggs. After the hatching season is over, and the birds are strong enough to shift for themselves, they leave the island—generally about March—and return in June. During the interval the excrements are collected, and at once pitted and placed ready for shipment. The nests of the guano birds thus appear to be made by their burrowing in the sun—dried and hardened birds'-dung. If, as on very rare occasions, rain intervenes, the nests get wet, and the eggs are destroyed. The present supplies of Ichaboe and Saldanhay Bay guano, it will thus be seen, are the dried recent excrements of sea fowls, which feed upon the enormous quantities of small fish that frequent the waters surrounding these guano islands. The fact that the guano is collected in localities rarely visited by rain, and before the recent deposits have undergone deterioration by dampness of the air or other influences, explains the presence of a high percentage of nitrogen, and the superior fertilizing value of the present importations of Ichaboe and Saldanhay Bay guano.

A sample of Saldanhay guano recently analyzed had the following composition:

Moisture	22.25
Organic matter, &c., equal to ammonia	11.28
Phosphate of lime	18.24
Alkaline salts	3.59
Insoluble siliceous matter	18.49

This guano was dark brown, and had a strong pungent smell, which is partly due to volatile carbonate of ammonia.

Ichaboe guano now imported has a light brown or yellow color, and generally is mixed with a good many feathers of the birds that produce it. A sample, the analysis of which is given below, is drier and richer in ammonia than the above Saldanhay Bay, yielding 12¼ per cent. of ammonia:

Moisture	17.01
Organic matter, &c., equal to ammonia	12.23
Phosphate of lime	30.18
Carbonate of lime	1.89
Alkaline salts	2.53
Insoluble siliceous matter	16.85

Treatment of Barn-Yard Manure.

Messrs. Editors American Farmer:

Much has been written on the subject of the application of barn-yard manure; when and how to apply it, and its proper condition when applied; some recommending the fall as the proper time, others the spring, plowing under, &c., &c.; most contending for bulk as the main thing desired, without regard to quality. For ten, not long but apparently short, years have I been trying to obtain my manure in the condition I wanted it, and have always failed till this season. Heretofore, as is usual, I have allowed it to collect in the barn-yard, and a few weeks before corn-planting had it piled, with the view of getting up a heat and fermentation to destroy the organic matter and evaporate the water, dreading the hauling of so much water and useless organic matter; but the cold winds of March and rainy days of April successfully combatted my desire to destroy the organic matter; or, in other words, reduce the mass to a condition of plant-food, or to *mineralize* it—if the term is admissible—with a full determination of so doing, if possible.

I had erected early last December a temporary shed, 60 feet long by 12 deep, to cut off the cold north winds, snow storms and rains, and covered the same with as much of the long corn-fodder as it was prudent to pile on. As the winter passed this was fed to the stock below. Twenty head of horses and cows soon gave me enough manure to start my foundation, consisting of ordinary horse-manure from stock fed on corn-chop, cut hay, and other accumulation of the barn yard, such as cobs, &c., gave me to start with,—a mass about two to three feet deep. In a short time the fermentation started, which soon reduced the mass. From time to time the supply was kept up, as the manure, corn stalks, &c., accumulated, sometimes being too high to be

reached by the wheel-barrow, but soon melting down,—the free and combined water and ammonia passing to vapor. This was kept up during the last long and cold winter, and at no time without sufficient heat to promote the desired and long-sought object. As spring approached the action increased, and a friend and neighbor wrote me, (I not living on the farm) advising me to send over some plaster to spread over my manure pile, as I was losing all my ammonia, the neighborhood smelling of it. This was the most gratifying news I had received, knowing it to be the best evidence of the destruction of organic matter by slow but sure oxidation or gradual combustion, and I wrote him accordingly.

Early in May all evidence that the mass had consisted of straw, corn stalks, &c., was gone into the air, and the remaining carbonized matter was ready for future use.

My corn ground was plowed, and before the harrow was started the black mass was properly spread, then harrowed in, and corn planted with a drill selected at the Centennial, and which, just here I desire to say, worked charmingly. The rows are four feet apart, and corn dropped every 16 inches, with the full assurance of my passing neighbors that there would be no corn in *that* field! The manure was all gone, corn too thick, weeds and grass would take possession, &c. This field was the poorest on the place, and ten years ago would hardly sprout pennyroyal. It will not do to count the chickens before they are hatched, but I will say this much: As far as the burnt-up manure went I have never had such a prospect for corn on the richest spot in the farm, with nothing under it but the above-mentioned matter, which was not considered worth hauling out by the party doing the work. The effect is beyond my hopes. It has now been planted about two months, and will hide a man and horse a few feet from the fence, the leaves overlapping each other with a dark green foliage, and a thick heavy stalk. Whether it will hold out I cannot say. I calculate there are 7,500 stalks to the acre, if none are missing. The drill drops and covers the corn, saving the crossing and thinning as is usual with hill corn, thereby saving the waste of corn and the necessary labor of covering, and avoiding the crowding of the roots when two or three stalks are left in the hill, one or the other making a nubbin. I shall watch this crop with much interest, and will report the final result if of any interest to your readers. Hills 3½ by 3½ feet apart give 3,600, which, with two stalks to the hill, about equals the above planting.

In your May number I gave you some account of a field on this place. From the same ground I have just housed full thirty tons of fine hay, and again repeat I have never used any ammoniated material, and commenced on a dreadfully poor floor. A. P. SHARP.

Baltimore, July, 1877.

Turnips and Orchard Grass.

A late letter from our old and highly-esteemed friend and correspondent, Mr. G. C. Gilmer, of Albemarle, Virginia, throws out the following seasonable suggestions:

In my rides through the country of late, I have been pained to see so great a scarcity of bread, meat, milk and butter, which is simply for want of thought and due effort. Now, I do believe, if each little farmer of any color will nicely prepare an acre (more or less) of land until the 15th or last of August; then apply a good dressing of some reliable fertilizer; seed it to two bushels of orchard grass seed sown both ways; then harrow them in; then get of Messrs. Landreth & Son a half pound of their best summer turnip seed, and sow it equally over the acre,—I do believe the turnips will repay all the outlay in food for man, cows, sheep and hogs, and in manures, and the orchard grass next summer and for many years thereafter will either in seed or hay ten times overpay all the cost, and then what a daily rich supply of good milk, butter and meat. I last fall made a plentiful supply of nice bacon out of pigs pigged on the 23d and 27th of last July. The turnips will shelter and protect the young grass; then, on the last of October or November, pull out the turnips and you will have a lot of grass which you and yours will so long so much enjoy you will never regret the cost and effort to secure it. Do try it, and I think you will never regret it.

Rye as a Green Manure.

Messrs. Editors American Farmer:

In the January number of the *Farmer* for 1875, there is an article on the value of Rye as a green manure, taken from the manual of Mr. J. B. Root. Previous to reading said article I had given some thought to this matter; but having failed in getting a good "catch" of clover on a piece of sandy land, which I was desirous of improving, I thought the opportunity a good one to test the practice of the above-named gentleman. Accordingly an acre of ground where scarcely any clover had taken, was measured off, and six pecks of rye seeded thereon, early in September of that year. About the 1st of June, 1876, I procured two bushels of "black-eye peas," and sowed them broadcast amongst the rye as it stood, then with plough and chain turned all under nicely; the peas soon sprouted and came up handsomely, and in August following plough and chain were again resorted to, and a good crop turned under; as soon as the ground settled down well on the pea vines, two bushels of rye was seeded on the acre and dragged in; about May 25th last a heavy stand of rye was again turned under, and about June 1st this land with that adjoining, and on which on one side clover had taken pretty well, and on the other side barn-yard manure had been applied at the rate of only fifteen two-horse loads to the acre, was planted in corn.

I will here explain that on this same piece of land shell marl had been heavily applied some three or four years previous to this trial, a great deal of which was yet visible in the soil, and hence no lime was thought necessary. At the time I write the corn in the acre manured with rye and peas is far behind that on either side, looks pale in color compared to that surrounding it, and cannot in my judgment produce more than half as much to the acre. I have turned in considerable rye besides the acre above referred

to, but I am now satisfied that rye as a green manure for corn is with me at least a miserable failure.

The old axiom, "The proof of the pudding is the eating of it," has in this case been verified; and I am free to own that the less pudding of that kind I have in the future the more I will enjoy it. Aside with rye pudding for the present, and as a substitute apple pie of Tetofsky apples proves to be just "the thing." The Tetofsky is behaving handsomely with me this season; specimens fully ripe July 4th. The trees of this variety I find are inclined to "overbear," and unless the fruit is thinned out a great deal of it is small and inferior. Notwithstanding, an orchard without Tetofsky will never be considered complete by EASTERN SHOREMAN.

July 6th, 1877.

Report from Nansemond, Va.

Editors American Farmer:

The IRISH POTATO crop from this and the adjoining counties has been for the most part marketed, and for those who were fortunate in getting E. Rose seed—*true to name*—and shipped early, it has paid well. It was, perhaps, in consequence of the high price and scarcity of potatoes that *fraud* was practiced by northern men, either the growers or merchants we know not which. The unsuspecting farmer buys seed marked *Early Rose* (this was not confined to Norfolk;) cuts and plants with confidence, and at harvest time finds he has *a late potato*, unfit for the early market, and the result is an almost total *loss* of his *time*, *labor*, and *money for seed and guano*. He is neither prepared to cellar or store his crop, and, in our climate, if they remain in the soil, rot is certain in August.

Some of these seed are reported as "late Rose;" others are a white potato, like the Peach-blow; others are a nondescript mixture of sundry sorts—all or most of them late—and a few are mixed with *genuine Early Rose*, as shown both by the tops and tubers.

Many farmers in this vicinity have lost their entire crops from the causes stated, since there is little prospect of the price rallying to a paying point for shipment from this section. For some years past many of us have been paying more and more attention to growing *our own seed* on the same land that grew the early crop, and we are confident that this *fraud* will give a new impetus to the practice. It is found that our own second crop will keep *without sprouting* through the winter as well as the northern-grown seed; yields as early and *more saleable potatoes* from each bushel of seed planted, because they are smaller in size and *plant more ground*, yielding many more eyes and sets per barrel than the northern seed. From one barrel of home-grown seed a neighbor dug 30 barrels this spring, and only 20 barrels for one from northern seed in the same patch. Indeed this was a large yield for this section *in early digging*, from 12 to 15 barrels for one being the average.

Shall we protect *ourselves by growing our own seed*, or shall we have at Norfolk a "seed-potato inspector" similar to those of fish and pork? The evil will cure itself, and there are few of us in the future who will buy northern seed-potatoes without a good inspection with our own eyes.

HALE'S E. PEACHES have not rotted on the trees (when near maturity) this season as in former years, and the few trees left in our orchards from the general rotting out of this sort which took place three or four years since have fruited well, and have been shipped. About the 25th July we shall pick Early Troth. The first week in August our Bartlett Pears go to the northern markets. Howell, Belle Lucrative, Beurre Superfine, and one or two other kinds mature so nearly with the Bartlett that we make one job of it and pick all at the same time.

The crop of Duchess Pears will be very large, and, notwithstanding the trees have been once thinned, I find they require unloading a second time. We hope to get our *melons* cut and marketed before you print this; like all our farm crops in this section, we are some days in arrear this season. Often we have ripe melons from 4th to 10th July.

Although late, we can't complain of the present season; farmers are cheerful; WHEAT and OAT crops were good and well harvested, and our CORN crop has not been better since the war.

There is just now a very great inequality between the prices of wheat, corn and meat, and many of our farmers who sell surplus bacon to buy their flour, think there is something *wrong somewhere*, or else the hog plague did not kill western hogs out like it did with us. This disease disappeared when warm weather set in. The statement made "that the disease unfitted brood sows for future usefulness," is in part confirmed: the most valuable animal I own, weighing now over 300 lbs., and a regular bi-annual breeder before her attack with this disease and loss by abortion of her pigs in March, has never *conceived since*, and must go to the pork barrel in the fall. Sundry others have reported the same as regards their sows. It is to be hoped that with abundant provision crops of every kind, and a *surplus to spare by many of our farmers*, the shrinkage of value in real estate, scarcity of money and hard times will disappear. At least we shall not feel it when we have *always something to sell* from the farm to pay family expenses and taxes. B.

The Farmer's Calling.

Messrs. Editors American Farmer:

It is not unnatural for one in a rural locality to occasionally indulge in a little country gossip. When a farmer or working-man talks with his neighbor, it is by way of interchange of views to enlighten as well as to be instructed. If it be true, "man never is, but to be, blessed," there should be but little cause for complaint. Farmers are not more apt to be dissatisfied than others, yet they have the credit of being croakers. We admit, the want of success or unfavorable seasons curtail their profits, and they bear such things as well as other people. Give us the names and address of those that are always the same satisfied and contented people. Men are creatures of circumstance, and change with the weather or luck, good or bad.

The farmer, not more than others, folds his hands nor trusts solely to Providence. He knows that a certain amount of brain and hand labor is necessary to success, and that the seasons have much to do with it. The adage—"if we have rain we will make corn; if not, none." He also knows that "there is a Divinity which shapes men's ends, rough-hew them as we may."

Science for example, mechanics, chemistry and philosophy, so far from being a hinderance, are perfect means of success. A blind man must have some one to lead him, else he cannot reach the place he starts for. As to experiments, all our real knowledge is the result of them.

Persistence, linked with knowledge, works wonders. One being in a section and knowing the constituents of the soil, and grows such articles as would flourish there, would make more than one unscientific and random in his practices. The fundamental principles of any calling should be kept in view, the modus operandi; also, familiarity with the use of tools and machinery. After you have done all necessary operations, trust to Providence for success. "Paul may plant and Apollos water, but God giveth the increase."

In view of all these things, it behooves every one from the farmer to the next of interest, vocations and trades, to persevere in the best paths of their callings until the problem is worked out to its logical results. Every business is dependent on others, and good times seldom prevail unless a degree of prosperity attends the majority of the community.

Being an old farmer, I have given my labor, time and attention to it off and on for nearly fifty years, besides reading some and seeing much of it done in various places. I am sure that science is a great aid and that prejudice has much retarded its progress. I was advised by an old friend some twenty-five years ago to use guano and plaster on my wheat, which I did broadcast. Guano attachments to drills then were not common. Growing two or three crops of Mediterranean wheat yearly in succession was much practiced; the land became filthy, and clover did not make a good stand. The guano and plaster I found brought forward the clover for me. I know of a successful experiment made some years ago, with equal parts of salt, plaster and ashes, at the rate of two bushels of the mixture to the acre. Perhaps an application of the same might prove efficacious on a full crop of grass.

As economy is the precursor of success, and profit is diminished by expenses, I was induced by a city gentleman to buy some chemicals;—a house that sold them furnished me with a formula. I purchased the articles, mixed them, and put them to use. The crops turned out well, and the costs were forty or fifty per cent. less. I was glad of it, as a noted vender of a fertilizer objected to selling on credit, and said any farmer that bought on credit was bound to fail. I differ with him on that score. If one has the cash, let him pay it out; and, if not, make judicious use of credit. Who would not borrow at six per cent. and invest in an article that would pay from fifty to one hundred per cent.? Fine ground bone, South Carolina ammoniated ground bone, or the Navassa, Kainit, plaster and salt, I have tested and found the mixture rich and effective, and less costly than preparations of high-sounding names. I read, with great pleasure, the scientific articles in the *Farmer*. They should be attentively perused. Let us accept information from any reliable sources. Farming is a live business and eventually will repay the time and attention devoted to it. I am willing to impart and always ready to learn.

C.

West Virginia.

Our French Letter.

Messrs. Editors American Farmer:

THE SEASON—THE CROPS—THE EXHIBITION.

The sun is a miracle-worker; a fortnight ago farmers were in as languishing a state as their crops, so unfavorable had been the consequences of a prolonged wet and cold spring. For fifteen days a sudden outburst of heat has changed the aspect of affairs like a fairy's wand. Agriculturists are satisfied without exception, and the prospect of excellent returns is certain. In addition prices will be excellent, as the countries engaged in war cannot contribute to the markets, but on the contrary promise to become purchasers. In the colony of Algeria, cereals are a failure this season owing to the drought; vast plains of proverbial fertility are as bare of vegetation as the contiguous desert; only in the mountainous districts, where some rain and snow have fallen, is a moderate harvest expected. Of course the same remarks apply to forage,—so that the price of cattle, hitherto so low, will tend farther to diminish. The only set-off to this is the increase in the price of grain by one-third. Even the vines are sadly in want of rain. To these numerous drawbacks must be added the plague of grasshoppers; but M. Durand's invention promises to deal with this enemy effectually; every township is being provided with one or two of his engines. Despite the political turmoils, the preparations for next year's exhibition proceed as rapidly as they are satisfactory. The principal features in the programmes and conditions for the agricultural show to be held from the 9th to the 15th June, 1878, are: applications for admission must be received before 1st Jan. next; black cattle will be transported from the frontier free; in the case of horses, at one-half of the usual rates. The juries will be half French and half foreigners; no juror can be an exhibitor, nor can any government establishment compete in the general classes. A proprietor may expose as many animals as he pleases, but can only obtain one prize in each class. In the case of horses, their age will be calculated from the first of January of the year in which they were foaled; only the owners can exhibit, and the government will nominate the French moiety of the jury. Every country exposing ten horses will have the right to name one juror. Prizes varying from fr. 100 to 50 will be awarded to those farm servants who will have best cared their exhibits.

PRESERVING GREEN FODDER.

M. Goffart, the eminent agriculturist to whom this country is indebted for the introduction as well as the popularising of preserved green fodder for feeding and fattening stock, finds

from an experiment made on ten heifers bought last November in Belgium, each representing an average weight of 30 stones, that they were not as remunerative as cattle tied up for fattening. Thus, estimating a ton of preserved green maize at fr. 20, that quantity represented a value of fr. 45 when given to fattening stock, and but fr. 17 when given to the heifers, or a loss of 3 fr. per ton in the case of the young stock. M. Goffart is at present feeding his cattle on maize put in the trenches last September; he has also just cut and enclosed in the trenches 50 tons of green rye; this operation was accomplished in less than a working day, thanks to a steam chopper that three men could not suffice to feed, and also to a lift. He has altogether relinquished the conversion of fodder into hay; all the stuff is cut green and pitted. The Nicaragua maize is excellent, provided it can be obtained directly from that country—a matter of great difficulty. The Indians cultivate the maize in a primitive manner; two oxen drag a piece of wood, with spikes, across the soil; this serves as a plough; a few branches well furnished with thorns does duty for a harrow; the native next makes a hole with his big toe, drops therein a few grains of maize, covering them with clay by a scrape of his foot. Science and practice are not quite agreed as to the nutritive value of maize, in the sense that it is not an aliment complete. The error in the present instance lies, in estimating the comparative value of nutrition, according to the per centage of azotized matters in the food, in place of the relative capability of these matters being assimilated by the system. In other words it is not the absolute quantity of nitrogenous ingredients present, but their degree of assimilation, that constitutes the nutritive test of a food. Thus, hay yields but 60 per cent. of assimilative nitrogenous matters, while preserved maize affords 70 per cent. Direct experiment corroborates these theoretic figures. It is also demonstrated that fermentation augments the proportion of the assimilative nitrogenous matters.

VARIATION IN HAY—IRRIGATION.

Messrs. Petermann & Grandeau have shown that no food varies so much as hay, in the composition and the digestibility of its alimentary materials. According to E. Wolff, the digestibility of meadow hay can differ from 70 to 39 per cent., following the locality where the hay has been produced, its fineness, and its aromatic flavor. The same species of grass can vary from field to field, and its chemical composition also,—following soil, manure, &c. Another cause overlooked is the matter of irrigation; a meadow too long submerged will yield hay with a reduced per centage of nutritive elements, besides killing the clover, &c., and which will soon be replaced by rushes. It is a safe rule never to allow water to remain on a meadow longer than 8 or 10 days in winter, and 2 or 3 in summer. Irrigation produces its effects best in these alternations of wetness and dryness; and these effects will be increased as the soil is well cultivated and manured. In the department of Vaucluse, in beautiful Provence, where Mme. de Sévigné said, if the inhabitants of heaven had any curiosity to regard mortals here below, they would select Provence as most convenient for their studies, there are competitions for the best irrigated lands, and each township pays its quota for a supply of water from the canals. The beneficial effects of irrigation are not due to the mineral ingredients contained in the water, which are slight, but to the water acting as a tonic on vegetation, and enabling the plant to absorb and digest more vigorously the carbonic acid of the air, &c. The agriculturists of Vaucluse mostly employ with irrigation a top-dressing of oil-cake—sometimes farm-yard manure.

In Valencia, in Spain, farmers by this process obtain as many as twelve cuttings of lucern per season. The emission and absorption of gases by the roots are proportionate to a vigorous vegetation; the soil's atmosphere is brought better into play, and both are facilitated by intelligent floodings.

BEET SUGAR AND CULTIVATION.

Sixteen inches by ten is the measurement found to be most suitable for the distances between beets intended for sugar. France produced 44 per cent. less of beet sugar in 1876 than in the year previously; perhaps low prices for the roots is the principal explanation of the decrease.

One-third of the departments of France are occupied in the culture of beet. The first sugar factory was established in 1810, at Lille; but it was a German named Achard, who, in 1799, first prepared beet sugar commercially, as in that year he presented two loaves of it to the King of Prussia. The honor of having discovered in 1700 sugar in beet belongs also to a German. The chemist Margraff M. Corenwinder has already pointed out the unsuitability of the green leaves of beet as food for cattle, and more especially when such constitute the exclusive ration. Experiments conducted at Mettray proved that not only was that diet injurious to the health of the animals, but positively reduced the per centage of butter in the milk to very nearly zero.

BUTTER MAKING.

The making of butter at a low temperature continues to be as warmly discussed in Germany as in France. In the Tyrol the Swartz plan of cold is as much adopted at present as in Sweden and Denmark. The object of churning the cream is to isolate as completely as possible, and then to reunite the buttery particles contained in it. Professor Soxlet, of Vienna, has settled the vexed question, "have these particles or globules an envelope?" He states they have not, but swim freely in the liquid, and being lighter than this liquid they naturally tend to rise to the surface; their volume varies, but the smaller size are the more numerous. Now, while an increase of temperature ought to cause the globules to ascend more rapidly, experience demonstrates the opposite. Researches by several trustworthy experimenters attest that it is not the uniformity of a low temperature, but its sudden application, that causes the cream to rise, and hence the advantage of placing the milk, when warm, in shallow, small pans, cooled with ice or compressed snow. In twelve hours the milk is fit for skimming. M. Lefeld, of Schoningen, is the advocate for the extraction of butter from milk without creaming,

but by the employment of centrifugal force. His machine has given good results; but the butter, though produced very expeditiously, has but little aroma and is sadly deficient in consistency.

Paris, June 28, 1877. F. C.

Necessity of Water on a Farm.

Messrs. Editors American Farmer:

The sun, earth, air and water are the four great corner-stones of organic life, both vegetable and animal, (I name them in proper order,) and every farmer well knows the invigorating, refreshing power of falling waters and the mellowing influence of morning dews on the vegetable kingdom, and yet how many fail to see the importance of a proper supply of the same element for his suffering animals. How often do we find stuck in some corner of his field or farm a pond of dirty, filthy water for hogs to wallow in and cattle dropping their excrements in, and yet the only supply for their thirsty stock, and that in many districts where the outlay of a few dollars would afford a pure and abundant supply. Such was the condition of affairs on the farm purchased by me some ten years ago, when it was almost impossible to get a good drink of water either for man or beast; at times the water being brought from a well nearly half a mile off. This did not suit the writer. According to the practice of the country, a "peach twig" was used soon after the purchase, and a well dug within the toss of a penny from the kitchen door, costing five dollars for the digging and walling up, and a pump was put in—the first one ever *seen on the place.* For the past ten years it has afforded abundance of pure, sweet and soft water for all farming purposes; and, being directly on the public road, a great thoroughfare, thousands are annually supplied with good water, and I have been told by the different captains of oyster vessels, who constantly obtain their supply in barrels from the well, that it is the best water they find on the bay shore. How often has it been my pleasure whilst visiting the farm to pump water for the stock who several times a day would collect around the pump, some draining from the trough what little might be in it. Another well was dug near the old barn, but not affording sufficient water; after reaching a tough blue clay a piece of 3-inch iron pipe was driven into the clay a few inches with the top above the water to keep it out while boring. A two-inch ordinary auger was welded to an iron rod, and in a few minutes the blue clay was bored through, and an overflow of cold water followed the auger when it was withdrawn of a temperature 50°, and which has continued to supply thousands of gallons to my dairy which is close by, and connecting with the pump by an iron conducting pipe.

A new and much larger barn having been built 300 feet from the old one, necessitated another well, and feeling sure that my stock often suffered for water even with the above two wells on hand, my next thought was for a constant supply independent of manual labor; for human hands will sometimes forget (neglect) to do their duty to faithful, loving animals. To accomplish this my experience at the Centennial came in play. A day spent among the windmills settled the business, after examining all of them. The simplest one to me was selected upon the most liberal agreement that if not as represented it could be returned after thirty days trial at the builder's expense. Results: in two or three days after its arrival, with only the assistance of my overseer, we had it erected over the new well above mentioned, and working like a charm,—affording a constant overflowing trough of pure water after supplying twenty head of horses and cows, which give the writer much amusement in seeing the stock trying to drink from the mouth of the iron pipe. A tank is also kept constantly full in the barn for mixing feed. Being directly on the public road out-side of the fence, there is another trough belonging to the public which is also kept full of water, which often tempts the passing animals to come to a halt to quench their thirst. For months the mill has faithfully performed its duty, bidding defiance to the storms and winds which so often prevail along our shores. So much for an outlay of fifty dollars for a mill and force pump. On the importance of water as a fat-forming element in supplying the hydrogen and oxygen to the carbonaceous matter of the food to form animal fat, I must reserve for another paper. This subject is an important one, and has received considerable attention from your friend, A. P. SHARP.

Baltimore, July, 1877.

The Gunpowder Club.

Editors American Farmer:

The Gunpowder Agricultural Club met July 21st at the residence of D. Gorsuch. Saml. M. Price presided. A resolution in regard to affairs of Maryland Agricultural College was read. The mover was asked an explanation of the resolution, and the club was referred to the open letter in July No. of *American Farmer,* showing the necessity of action in this matter on the part of farmers throughout the State. The resolution was unanimously carried. It was also directed that the secretary send a copy of the resolution to the *American Farmer* and county papers. [We give these resolutions elsewhere.]

The committee on the prize corn acre here offered the following report: "Believing that the former competition has been of much advantage to the club in stimulating its members, therefore: Resolved, that the club offer $20 for the largest yield of corn on not less than one acre. No premium for less than 28 brls. per acre. The competitors to be governed by rules adopted by the club last year."

During half hour for questions, J. D. Matthews asked whether it is injurious to work corn after it has tasselled? T. T. Gorsuch remarked that he had some in tassel that he intended to work. (*q.*) Would it hurt the roots of the corn by disturbing them at that time? (*a.*) No; work it shallow. (*q.*) Will cutting the roots tend to develop the grain of the corn? (*a.*) No; would still advise shallow cultivating; the ground being thus leveled the crops will withstand a drought better than leaving it in the rough.

A. C. Scott asked whether it is an advantage to pull suckers. Joseph Bosley replied that the advantage was very great. T. T. Gorsuch is of the same opinion. Question was asked as to the advantage of fall plowing over spring plowing for corn. Jos. Bosley noticed that his corn was doing better on spring-plowed land.

D. Gorsuch can see in his corn-field to the row when he stopped plowing in the fall,—the fall-plowed land showing best at this date. T. T. Gorsuch said that that was the reverse of his experience, and agreed with Jos. Bosley; and that the advantage of spring-plowing would show itself, should there come a dry spell. He would like to know the best plan to thresh and clean orchard-grass seed. Jos. Bosley threshes by a machine with separator attached, then passed slowly through a fan. T. T. Gorsuch had threshed 42 bushels orchard-grass seed from three acres, and found his mules eat the hay readily after it was threshed. During a discussion on timothy hay, it was stated that stock preferred it when cut, when the seed was in the dough-state, than when cut before the seed was matured, or after the head was dead. Ed. Scott asked D. Gorsuch what had been the effect of the heavy aftermath which the club saw last fall on his mowing fields? (*a.*) He had found his hay cut heavier this year than for several years previous, even where was the greatest amount of aftermath.

Unfinished business being called, D. Gorsuch hoped the road question would not die out, as it was one of vital interest to every farmer and resident of Baltimore county. During the ensuing lively discussion on this subject, it was suggested that a meeting of committees from Gunpowder Club, Junior Gunpowder Club, Glencoe Grange, and all interested in this important question, should be held in convention; and on motion of the foreman, Saml. M. Price, it was decided to hold said meeting at his residence, on Saturday, August 4th, at 2 o'clock P. M.

The question for discussion set for this meeting was as follows: "In what quantities and to what crops should commercial fertilizers be applied?"

T. T. Gorsuch.—To all crops where the soil is not naturally strong enough, and the quantity to be applied depends upon the condition of the soil; on poor soil he preferred sowing 400 lbs. broadcast, and 100 lbs. by drill. In good soil 150 to 200 lbs. by drill, per acre. (*q.*) What quantity to corn and how applied? (*a*) In the hill, 200 lbs. per acre. (*q.*) Did he ever mix plaster with fertilizers? (*a.*) Yes; but only with guano.

Ed. Matthews does not think that application of fertilizers increases the corn crop. Considers 200 lbs. drilled sufficient for his soil. Finds from his experience that 100 lbs. drilled is worth 200 to 250 lbs. broadcast. (*q.*) On poor land does he not prefer sowing broadcast? (*a.*) No; would rather drill both ways.

A. C. Scott.—Would use fertilizers on all crops—quantity to depend upon quality of soil; advocates, from experience, drilling over broadcasting, and mixes all fertilizers with plaster—one part plaster to two fertilizer; 150 pounds to the acre. Used Whitelock's and Tyson's pure, with not much difference in favor of either; both doing better when mixed with plaster. (*q.*) Does he ordinarily plaster his land? (*a.*) Usually every five years, at rate of 400 to 500 pounds per acre.

Ed. Scott.—Believes it to be a benefit to apply at rate of 15 pounds per acre, applied by drill; questions the benefit to corn. Drilled Whitelock's and Tyson's on fallow ground with equal benefit. Had some of Tyson's left, which he applied on stalk ground without benefit. Is positive that fertilizers applied with grain insures good grass crop.

D. Gorsuch.—Thinks the most profitable way is to apply 8 four-horse loads of barn-yard manure and 125 to 150 pounds of fertilizer per acre, spreading the manure and following with drill. Has obtained good results by applying on corn, but considers it that much waste; would be better to put that additional amount on grass; used small quantities, say 100 pounds Guanape and Bullock's bone per acre, with good result in one part of field, and on other side no benefit whatever. (*q.*) Does he ever mix fertilizer and manure? (*a.*) No; think the waste would be too great. Had mixed cow-manure, ashes, bone and plaster, and applied in the hill, which killed the corn in some places, and retarded its growth in others; applied on the hills with benefit, but not to paying extent. Barn-yard manure and fertilizer usually assure good sets of grass.

J. D. Matthews.—Applies about 150 pounds fertilizer per acre to corn scattered in the hill,—finds, unless well scattered, if season proves dry, it burns the crop, cuts off corn. Drills grain with 200 pounds fertilizer per acre between shock rows, and works in 250 pounds per acre, with shovel-plow, in the shock rows. This field is followed again with wheat, with same proportion of fertilizer, which gives about 550 pounds per acre, and usually insures good grain and grass crops. Has used fertilizer on potatoes, without material benefit. (*q.*) Does he think the use of commercial fertilizer impoverishes the land? (*a.*) No; where all the straw is used on the place, the increased amount gained by use of fertilizer tends to keep the land in better tilth. (*q.*) Does he not think that the surplus straw, &c., were sold off the place, the use of fertilizer would impoverish the land? (*a.*) Yes. He feeds more grain because he can keep more stock on the extra forage he obtains by use of fertilizer. He also said, that Mr. Whitelock had told him it was a waste of his (Whitelock's) fertilizer to put it on land recently limed; but experience showed him that said fertilizer applied to lands recently limed, at rate of 200 pounds per acre, gave him *ten times the yield* of grain over that portion of field not limed.

D. Gorsuch asked T. T. Gorsuch if commercial fertilizer had a tendency to work on the organic matter in the soil? (*a.*) Yes. The more you use it the more necessity you have for continuing to use it.

N. R. Miles.—Has had little experience with commercial fertilizer, but that little teaches him that about 200 pounds per acre is the right quantity, and drilling the proper mode of applying it. Sowed fertilizer on heavy land broadcast, at rate of 200 pounds per acre, without benefit, and believes the fault lay in broadcasting.

S. M. Price.—When ground brings 12 to 14 barrels of corn to the acre, it is not worth while

to use fertilizer. Thinks it necessary on wheat; always drilled. Had sowed broadcast, double quantity, with one-half less profit. Last year drilled in 100 pounds per acre, with good results, except half an acre where drill did not sow well, which portion showed one-third less yield.

Isaac M. Price.—Has used fertilizer on corn at rate 150 pounds per acre without benefit, but a mixture of 80 pounds of Whitelock's and Tyson's, and 35 pounds plaster per acre applied in hill, proved beneficial,—increase per acre being about 1½ brls. over that on which no fertilizer was used. He finds commercial fertilizer of great benefit to small grain, and believes that 300 lbs. per acre gives a better yield than 150 lbs. Considers the application of barn-yard manure in conjunction with fertilizers will give better yields with less of both materials.

Jos. Bosley.—Wherever he has used fertilizer has found it paid all cost, and a good per cent. on money invested on small grain or corn. He dropped in corn-hill a mixture, ½ Whitelock's and Tyson's and other half plaster at rate 160 lbs. per acre; land manured lightly. Followed corn with rye drilled in late; could trace the corn through the rye the whole season, by the beneficial effects of fertilizers. Where drill sowed most fertilizer the grain was the best. Would sow 200 lbs. per acre when possible. Used fertilizer with ½ plaster on corn, dropped in the hill, with great benefit.

B. McL. Hardisty.—Has used commercial fertilizer with benefit on all crops. On corn prefers mixture ½ plaster and ½ fertilizer at rate of 150 lbs. per acre; one-half dropped in hill, well scattered, and one-half on top of hill. For small grain finds it more beneficial to drill in than broadcast. Prefers 300 lbs. per acre rather than 150 lbs. Has applied as much as 320 lbs. Whitelock's per acre in good land seeded with Clawson and Silver-Chaff. Silver-Chaff went down badly, but Clawson stood erect and yielding exceedingly well. Has always found standard fertilizers to pay well.

The club adjourned to meet at the residence of J. D. Mathews. Subject for discussion: "How should land be prepared for seeding wheat and rye, and which is the best variety of wheat for seed?" H.

Baltimore Co., July, 1877.

The Agricultural College.

Letter from Gen. Hardcastle.

MR. W. B. SANDS:

Dear Sir—I have read your open letter to me in the *American Farmer*, and regret its publication. First, because I did not want to take part in a newspaper discussion on the Agricultural College. Second, because I fear it will do harm rather than good, by keeping alive a prejudice against the college which ought not to exist, though I acquit you of any such intention.

Being the youngest member of the board of trustees, next to yourself, I am in no way entitled to the influence you attribute to me in the management of the institution. The fact is I am so inconveniently located as regards access to the college, and my time is so much occupied at home, that I cannot give to it that personal attention which I would like to do. On this account I declined the position as trustee when first elected two years ago. If I made a mistake afterwards in consenting to serve in that capacity, it was, as you know, at the earnest solicitation of prominent gentlemen from different parts of the State.

At that time the college was incumbered with a debt of $13,000; great dissatisfaction was expressed at its past management; there was controversy among its best friends, and wide diversity of opinion as to the proper course to be pursued in this embarrassing state of affairs. It was even proposed to turn over the college to the State Board of Education, but the trustees declined to entertain so humiliating a proposition. Perhaps the most serious difficulty that presented itself was to secure the services of a competent president and faculty at the reduced salaries necessitated by the pecuniary embarrassments of the college. To have called upon the State for an appropriation to liquidate this indebtedness would have been an easy solution of the difficulty, but it was determined to make an honest effort to pay off this debt without invoking aid from the State treasury. During the past two years that policy has been successfully carried out. The college has been kept in successful operation, and its debt has been entirely extinguished. In accomplishing this gratifying result, President Parker has displayed superior executive ability, which ought to commend him to every friend of the college. Instead of requesting his resignation and that of the faculty by whose aid and co-operation the good work has been accomplished, I deem it wiser policy to retain the services of tried and meritorious officers.

My judgment does not approve of your plan to "revolutionize" the college. The objection to it by one of the trustees (I understand it was Judge Tuck—a wise man and an able lawyer) that it would "violate expressed conditions of the charter," seems to me well taken. (1) Nor is your plan warranted by the action of the stockholders, whose re-election of the old trustees was an endorsement of the policy of the past year. (2) There is no objection to Mr. McHenry's resolution "to make instruction in practical and experimental agriculture the leading feature in the educational system at the earliest possible moment," if legitimately and rationally carried out. Study of the sciences and familiarity with their principles must *precede* their application to agriculture, so the earliest possible moment when such instruction can be made a leading feature to be of any value in the educational system, would be in the higher classes; and then the time would be too short to derive much benefit from the partial instruction that must necessarily be given. My notion is, that after leaving the college the young farmer can best apply himself to "practical and experimental agriculture," and after years of diligent practice and patient observation on the farm, he may then realize the benefits of the theoretical and scientific teaching he secured at school. (3) It seems to be forgotten that a majority of the trustees are farmers, desirous as you are to give to agriculture all due prominence in the educational system that a proper regard for the law and the best interests of the college will permit. Unfortunately, there is great diversity of opinion on this point, more specious than real, which, it

occurs to me, proper consideration and forbearance would reconcile.

It is not necessary that you and I should agree as to every particular regarding the organization of the college, but we ought not to differ as to the essentials necessary to make it a *good school*, which after all is the great desideratum. We may disagree about the character and extent of the course of instruction to be pursued, but that is a minor matter compared with other things, and upon which too much stress has been laid. If proper discipline is enforced, "good morals and manners" as well as habits of study inculcated, and there is thorough teaching, all the essential requirements for sound and profitable instruction are fulfilled. And provided the course of instruction be a liberal one, or in the language of the charter, it be "the usual course of scholastic learning," every facility is afforded for acquiring a *good education*, which, above and before everything else, ought to be the aim of the college. (4) It is what a Maryland farmer may desire for his son: what was designed by the earnest and wise men who founded the college, and what its name implies. Why, then, is it that we cannot agree to let the college be organized and conducted on such a basis as it should be and may be if its friends will give it their united sympathy and support? Are we to continue to disagree and contend about matters of minor import, which, by mutual forbearance and concession, may be adjusted? I trust not.

As a representative of those most active in opposition I was glad of your election as a trustee, to take part in the management of the college. You now have the opportunity to see and know how it is conducted, and to make suggestions for its improvement, which I am sure will be properly received, considered and acted on, by your colleagues. What I ask of you is to act in a conservative spirit; be not hasty or extravagant in your demands, and you may then be able to accomplish what, I am sure, you earnestly desire—not merely the adoption of some of your own views, but what is vastly more important: the re-establishment of harmony among the friends of your *alma mater*. This is well worth your striving for, and it appears to me is the most practicable way of reconciling existing differences.

Without attempting to reply in full I have frankly given you my views on the salient points of your letter. But I would say a few words as to your objections to the military features.

The fact that candidates for West Point and Annapolis have to pass a rigid examination before admission at the United States Military and Naval Academies, makes it a high compliment to the college to be selected as the place to prepare them. As President Parker well says: "no college in the country could or would refuse to receive these students."

The daily drill, which does not interfere with study, is both a manly and healthful exercise, and is required by the law of Congress. The chief benefit to the students and to the school, from military organization, will be in the government of the institution. Military discipline gives the best, most convenient and efficient mode of conducting school or college management. (5) (6)

Very respectfully yours,

EDW. L. F. HARDCASTLE.

Easton, Md., July 23, 1877.

We can only express regret at General Hardcastle's position. We reply:

1. Whether the changes proposed would have violated the charter, as objected by Judge Tuck, largely, if not solely, depends on the construction given the clause, "the usual course of scholastic learning;" but neither the spirit nor the letter of the law has been so closely adhered to in the past—as might be readily shown—that changes calculated to make a serviceable institution of one now useless, need to be too rigidly scanned for technical exceptions.

2. The re-election of the old trustees was *not* an endorsement of their policy. It was rather a condonation of past faults upon assurance of change and amendment. Else was superfluous and inconsequent Mr. McHenry's resolution, the design of which was, and its effect (fairly carried out) would have been, to realize the promised alteration of system. Mr. Davis voted as he did, because, as he said, "of the disposition and resolve to so model the college as to make it conform to the needs of the agriculture of our day;" and Mr. McHenry, because "it had cleared off the debt and was prepared to so alter, *as stated*, the main objects of its policy." The communication on another page, from the latter gentleman, is an explicit refutal of this mistaken assumption.

3. Should these views be accepted, the logical conclusion is not only that the teaching of practical and experimental agriculture is impracticable, but that the farm itself is a useless redundancy. No occasion then for doing what one of our correspondents suggests, since the institution has, in effect, already "pulled down the flag of Agriculture."

4. We cannot consent even to stand upon the foundation which Gen. Hardcastle lays down as essential. We have tried to show what, in our judgment, the college should be. And that is, *not*, as he says, a school with every facility for affording a *good education*, but one giving opportunity for achieving such a good education as *best fits the future farmer* for his duties as a citizen and his needs as a cultivator of the land. This, too, comes nearer satisfying the law creating it.—There were and are other *good schools*—this was to have a character of its own, distinctive from them.

5. In such an institution as will satisfy Gen'l Hardcastle and those concurring with him, there

is no objection to military government and discipline, nor to receiving special students for the United States Naval and Military Academies. But they make a foreign element in an agricultural school, and their presence and influence cannot but be contrary to the spirit which should prevail and animate president, professors and pupils. We cannot admit that it is a "high compliment" to our State college that these young men should come thither to be drilled in reading, writing, arithmetic and grammar—the branches in which examinations are made at Annapolis and West Point—and which, as it seems to us, ought not to be taught there at all. Instead of there being no college which would or could refuse, is there one deserving the name would consent to receive them?

Further, the requirement of the law that tactics be taught does not at all necessitate a military system and routine, subordinating or rather usurping the place of all agricultural features, and giving tone to the entire surroundings.

6. The effect of a school remodeled as proposed, and successfully conducted by men of skill, enthusiasm and energy, would, after all, be rather moral than material. For a few years it certainly would be. It would not be the less useful. To know that there was such an institution preparing young men for their future work, its teachers making investigations and experiments for the benefit of agriculture, and on the alert to adapt to our uses and circumstances the discoveries in science made elsewhere, would be both helpful and stimulating to our farmers. Ordered and directed as now, beyond failing to do any good, it is absolutely an obstacle to agricultural development, discouraging inquiry and retarding improvement.]

Letter from Mr. McHenry.

WM. B. SANDS, ESQ.:

In reply to your note, asking whether "the change of programme in the working of the Agricultural College requested by your resolution as passed by the stockholders would have been substantially met by the plan suggested in those presented by me to the board," I take pleasure in saying that the plan embodied in your resolutions and explained in detail in your letter to Col. Hardcastle, commands in the main and in nearly every particular my hearty approval, as an exhibit of the purpose with which the college was established, and of the true mode of carrying out that purpose. It has long been well known that the college, though agricultural by name, has not really been doing any effective work in the cause of agriculture; yet as many changes have been made in the composition of the board of trustees without apparently producing any result to the advantage of that cause, at the annual meeting of the stockholders held in Baltimore in April last—no plan of re-organization, such as you now suggest, having been brought forward; no platform (in political parlance) having been avowed on the part of the gentlemen whose names were on the opposition ticket,—I believed it to be better to vote for a re-election of a majority of the members of the old board, than to vote for disorganization with no definite promise of improvement; and hoped that under specific instructions from the stockholders, the trustees would gradually inaugurate the desired reform.

At the present time, although the trustees at their last meeting refused to adopt your resolutions, I feel unwilling to assume hastily that they will totally disregard the expressed wishes of the stockholders, and I have therefore declined to unite in the call for a special meeting of stockholders to take place in August; but if after the commencement of another session of the college it shall appear that no serious progress has been made in the adaptation of the government of the college to the end for which it was created; no effort to make it *the School of Instruction in Agriculture and Kindred Sciences*, to establish and sustain which the contributions of individual subscribers, the purchase money by which the State acquired half interest in the property, the annual appropriations by the State, and the proceeds of the sales of public lands distributed by the United States Government, were and are all given, I shall be ready to unite with stockholders holding similar views with my own, in an appeal to the Legislature to interpose, either by annulling the charter, or by remodelling the form of government of the college, and requiring those placed in charge of it to see to it that the agricultural interest shall derive some benefit from an annual expenditure in its name, which, estimating the interest on the value of the property at fully $6,000, and the income from State and land scrip at over $13,000, amounts to nearly $20,000.

Respectfully,

J. HOWARD MCHENRY.

Baltimore Co., Md.

[The time for alterations was *in anticipation* of the new session. The announcements, as issued, change neither the past plans nor *personnel*. A called meeting was the only mode available to accomplish the wishes of the stockholders. Some who deprecate any interference by the Legislature believe a change now is the only way to avoid it.]

A gentleman of Anne Arundel writes:

"I agree fully with the views of restoring the college to the purposes for which it was established. Its founders could never have dreamed that it would be converted into a school for preparing candidates for admission to West Point and the Naval Academy. Whatever influence I may have *has* been and *will* be used to restore the college to the uses for which it was established; and unless it is so restored, I am in favor of withdrawing the State's annual donation."

Agricultural Education.

MR. WM. B. SANDS,
Editor of the American Farmer:

I have read with great interest and satisfaction your open letter in the July number of the *American Farmer*. It is gratifying to learn that, despite all opposition, the struggle to make the State Agricultural College what it ought to be still goes on. Unfortunate circumstances prevented me, while holding the Chair of Agriculture at the College, from contributing greatly to the success of that struggle, and it seems that the only way I can now aid in it is by laying before the board of trustees and the public generally the results of my experience. I shall strive to do so in a fair and impersonal manner, not attacking individuals or reflecting upon those whose course of action I was compelled to oppose. I can best accomplish this by giving my conclusions in a form of analysis of Agricultural Education, and a sketch of the organization of an ideal college.

Before constructing a system it is indispensable to have a distinct notion of the subject matter with which it deals and the end it is designed to effect. Now the all-important thing to remember in this connection is, that agriculture is a practical art, not a science. Its methods and processes, as those of all other arts, may be aided and improved by science, but it never can be learned or taught as a science—all attempts to practice it in a purely scientific way have been failures, and will be until the end of time.—Education for it therefore must, whatever system we adopt, occupy itself principally with instruction and training in the practical art. For the object of such education is unquestionably to turn out good and successful farmers, not scientific men or classical scholars or skilled engineers. All other objects, however desirable, must be kept subordinate to this central one. It is also necessary that the means used to effect these ends should be adapted to the actual position and requirements of the majority of farmers.

We may conclude then that Agricultural Education should embrace—

I. Instruction and training in the practical art.

II. Instruction in the science relating to the art (two grades.)

III. General education suitable to and necessary for the farmer (two grades.)

No study or grade of study not legitimately within these limits should be admitted.

These three departments we will discuss in detail as they would find place in an organized institution—

I. Department of instruction and training in Practical Agriculture. This should comprise two courses: First—A systematic course of instruction in established and accepted methods; of culture of ordinary crops; of routine farm work; of rotation; of making and applying manures; of the selection, breeding and care of stock; of the structure and management of ordinary farm tools, machines and outbuildings.—The methods, crops, implements, &c., employed as the basis of this instruction, should be confined to the most improved forms of those now in approved and successful use on farms worked for profit. The object being to place before the pupil a complete working model of a practically successful farm, and familiarize him with all the details of it. This course should be carried out partly by lectures in-door and out-door, but largely by manual labor under the supervision of the professor; and by promoting students, as they showed capacity, from actual labor to the supervision of the various operations, to accustom them to the care and responsibility of the direction of labor and to develop executive ability. This plan has been tried in Germany with most satisfactory results. Second—A course of text-book and lecture instruction in theoretic agriculture, or the application of scientific investigations to farming, with experiments in new and improved farming processes. This experimental farming should be kept distinct from the practical farming above spoken of. The object being in this case to show the pupil that he should indeed be ready to use any improvement that science can suggest, but that novelties should be carefully tested and cautiously introduced. As soon as experiment has shown a process to be valuable, that process should be introduced upon the model farm.

This department of Practical and Theoretic Agriculture would be under the charge of a single professor, with such assistants as he needed. He should have entire control of the farm, and be responsible to the board alone for its management.

II. Department of Instruction in Sciences relating to the Art.

This department comprises two divisions:

First—A course of instruction in natural science, including chemistry, natural philosophy, zoology and botany. Education in these sciences should only be carried so far as to enable students to understand and use the results of scientific investigation. A thorough technical course in science absorbs immense time and study and is of little more use to the farmer than a similar course in Hebrew. This division would be under the charge of a professor of natural science.

Second—A course of instruction in mathematics extending to practical engineering, surveying and applied geometry, but omitting the higher and abstract mathematics. Especial attention should be paid to the higher branches of arithmetic and the science of accounts. This division would be in charge of a professor of mathematics.

III. Department of general education. It would be tedious to enumerate all the branches comprised under this head. It would include, of course, thorough instruction in the English language and in history and kindred studies. It should be so directed as to fit the student for subsequent self-improvement, and imbue him with a zeal for all education compatible with his special pursuit. And in this connection we should remember that in our land the farming class are not mere tillers of the soil, but the chief element of the body politic. Our ideal college would therefore be defective if it failed to instruct its students in the constitution of their country and of their State, and also in the elements of a sound political economy. I may add that I am satisfied by my own observation that such elementary knowledge of law and of the forms of legal contracts, leases, &c., as a youth could easily acquire,

would save him in after life much pecuniary loss and annoyance. This department of General Education would be in charge of a Professor of English and History.

I have given merely an outline of a system, but one which admits of all needful expansion. It provides for only four first-class professorships, one of which would be held by the president and one by the treasurer or financial officer. Any additional force should take the shape of sub-professorships in the different departments.

It makes no provision for instruction in the classics, these being considered out of its sphere and equally useless and harmful to its special ends. Provision might be made, if necessary, for elementary instruction in French and German. Technical instruction in such studies as veterinary medicine and surgery could be given by non-resident lecturers.

Such a plan as I suggest would, I believe, if faithfully carried out, give us a successful agricultural college. But much more than a plan is necessary. I cannot better illustrate this than by a short account of my own experience.

I went to the college an enthusiast in the cause of agricultural education. I saw that it was necessary. I believed it possible and hoped to realize it. How vain that hope was may be seen from the obstacles I had to encounter, and which did not diminish but increase during the two years of my professorship.

1. I found that a majority of the board of trustees did not know what agricultural education was; did not understand it; did not care for it and did not believe in it.

2. I found it out of the question to alter the system upon which the college was run,—that it was to be a literary institution with an agricultural department—a system as false in theory as it is fatal in practice.

3. I found that the members of the faculty—many of them my valued and most kind friends—were wholly wedded to this theory, and also not only did not have the cause of Agricultural Education at heart, but could not even bring themselves to believe it possible.

4. Of all our many students *not one* came there to study agriculture. They were boys and youths who only sought from us such an education as would enable them *to escape* from farming into a profession.

5. I found my department utterly unequipped with books, instruments or implements of any kind.

6. I found that while my position required me to try experiments, theoretical and practical, I was left without means to do so, or even the soil upon which to try them, and that all my efforts and suggestions in this direction were viewed as impertinent interference both by farm manager and president.

7. I was never able to obtain from the board the appropriation of a single dollar for the purposes of my department. A few necessary books I procured through the special intervention of the president of the board.

8. I found that without means of illustrating my lectures, I could scarcely make them intelligible to students, much less interesting.

One thing only did I succeed in. I insisted that attendance upon my classes should be compulsory, and for three-fourths of the two years all students in the college department were obliged to attend from two to three recitations per week. From all I have been able to learn, I believe that this was the first time regular and systematic instruction in these special studies was ever given at the college. But I cannot claim that much good was effected. Students viewed these studies as so much lost time and labor, and only worked at them to please me personally. On my part I had no means to render them interesting, and found it a thankless task to teach a science to scholars who disliked or despised it. After a struggle of a year and a half I gave it up. I sought an interview with the board; laid the whole case before them; made my last appeal for an appropriation, and left it for them to say whether agricultural studies should be compulsory or elective. They decided for the latter, and that was the end of it.

I hope that what I have written may prove of service in any future effort to properly organize a department of agriculture at the college; it will at least show clearly what obstacles must be removed before even partial success is possible.

It has been necessary to say much that seems to reflect upon the board of trustees during the period referred to; but I must disclaim the inference that they intentionally erred. Still, when they see, as the result of their labors, the State Agricultural College transformed into a preparatory school for the United States Military and Naval Academies, they must themselves perceive their failure. The trouble has been that they set before them the wrong standard of success. To this statement I must make some exceptions. The thanks of the agricultural community are due to Mr. A. B. Davis, lately president; Mr. J. H. McHenry, and several of the State's representatives on the board, for their systematic efforts to make the college what its charter contemplates. I remain yours, very truly,

HOBART HUTTON.

Brookeville, Md., July 15, 1877.

What the Farmers Say.

We give from our correspondence the following, only a portion of those received on the subject:

BROOKEVILLE P. O., MD.,
7th Month, 7th, 1877.

WM. B. SANDS,
Editor American Farmer—

Respected Friend: At our regular monthly meeting, held this afternoon, the subject of thy letter to Genl. Hardcastle was called up for consideration; and after a full interchange of views with regard to the whole matter, I was directed, as secretary of the club, to forward thee the following:

Resolved, Having read with great interest the open letter to Genl. Hardcastle, in relation to our State Agricultural College, published in the July number of the *American Farmer*, we take this method of expressing the cordial approval of the "Farmers' Club of Sandy Spring," of the able and convincing statements, in which you have shown what the Institution might become,

and how far it now falls short of the requirements of the times. Not the least pleasant part to us is the courteous and dignified, yet spirited, manner in which the views are set forth.

What we desire is that it may become an agricultural school in fact as well as in name; or, if such a result is impossible, that the State may withdraw its appropriation from an institution that fails, almost entirely, to carry out the objects for which the appropriation is expressly made.

Signed by direction of the club, holding its regular monthly meeting at "Brooke Grove," the residence of George E. Brooke.

JAS. S HALLOWELL, *Secretary.*

The following are the resolutions of the Gunpowder Club, referred to in the report of its proceedings on another page in this No.

Resolved, That our State Agricultural College, as conducted at present, fails to meet the approval of the Gunpowder Agricultural Club, some of the members of which are stockholders in the institution. In our opinion it should prepare young men for the actual duties and experiences of farm management, and the experiments should be of a character to be of some value to Maryland farmers, as was promised when the college was founded. Its course of instruction should combine Practical Agriculture and the application of the sciences to it, omitting the "ornamental" branches and all military features, except the limited amount made necessary by law. The published resolutions of Wm. B. Sands, one of the trustees, have our commendation in these respects.

Resolved, further, That the State's trustees be requested to endeavor to have these views carried out; and that, failing to do so, the support by the State of an institution so profitless to agriculture should cease, and the fund be given a new direction with that end in view.

An intelligent farmer of Anne Arundel writes:

"I concur in your views as expressed in your letter to Genl. Hardcastle. Let us have an agricultural college, or none. There are more *quasi*—make believe—colleges in the land now than can be supported. I have no objection to the present board and faculty's running the institution as they do, if they will call it by some other name and pull down the flag of Agriculture."

A former student at the college, now a successful and prominent farmer in his section and a stockholder in the college, writes:

"I agree with you fully in the resolutions having reference to the management of the agricultural college. My ideas have never changed, as to what that college should be, since I, a youth knowing my needs, sought them there and failed. Neither of us are so old as to have forgotten what youths destined to the profession of agriculture need. How many disappointments, heartburnings, and how much pecuniary loss would have been saved me had I been taught at school that which I have learned only by years of observation and experience, oft-times far from pleasant. There is a demand—the want is strongly felt—among farmers for an institution where their sons can be educated to take charge of the estates toil has won, and conduct them upon the scientific basis the world's progress compels; but while the want is felt and the demand made, it is among a disorganized and separated class, occupying a position where they are unaccustomed to assert and insist upon their rights."

A farmer in Charles Co., accustomed to take an active interest in all public affairs, writes:

"Your resolutions and 'open letter' to Gen'l Hardcastle cover the whole ground, and leave nothing more to be said. If you never do anything else for the farmers, they ought to endear you to every patriotic man. If you fail in the path that you now indicate, recollect that we have a Legislature to fall back upon—the last resort, but a very effective one."

From a letter from an eminent farmer of our State who was one of the most indefatigable of the original promoters of the college, a liberal subscriber to its stock, and long a member of the board, we take the liberty of making the following extract, regretting that, the same not having been intended for publication, we cannot add to it the weight of the writer's name:

"I approve of introducing the element of young and and active farmers into the board of trustees of the Agricultural College..... I was from the first organization more ultra than any other member of the board in desiring to carry out strictly the intentions of the charter and the compact with the United States. I will yet aid, to the extent of my ability, in remedying the perversion and almost fraud which has been perpetrated. But it rests with active young men, disencumbered, to look up voters and proxies. Without these, talk and such excellent writing as the letter of your junior, which I have enjoyed, will be powerless. It is my full purpose to attend the meeting."

The following is from a prominent citizen and farmer of Baltimore county, and one of its representatives in the Legislature at the time the charter of the Agricultural College was granted:

WM. B. SANDS, ESQ.:

DEAR SIR—In the proceedings of the board of trustees of (what is known *by title* as) the Maryland Agricultural College, I find a series of resolutions offered by you, but by the board laid upon the table. Allow me to say that I most cordially endorse the resolutions; as also your efforts in behalf of the agricultural interest of the State of Maryland. I feel well assured that unless the contemplated change is made by the board that the agriculturists of the State will demand relief through the Legislature. I beg you to accept (without flattery) my congratulations for the full and exhaustive exposition of this whole matter, of the objects, government, &c., of this institution, in your letter to Gen'l Hardcastle. I hope this change may indeed be the dawning of a bright future for the agricultural interests of Maryland.

With high regard, I remain your friend,

S. M. RANKIN.

Live Stock.

The Cow as a Utilizer of Food.

The *National Live Stock Journal* says: There are some peculiar and unexplained points about the product yielded by a cow from a given amount of food as compared with the product of the same amount of food consumed by a steer. Naturally, we should expect so many pounds of food eaten by a healthy and thrifty steer would produce as great a result in the growth of the steer as the same quantity of the same food would yield in the product of the cow. But suppose we take a thrifty steer, thirty months old, weighing 1,000 lbs., and place him in an excellent pasture, and a fresh milch cow, also weighing 1,000 lbs., and place her in the same pasture. They are both kept there through the season—the steer gaining in live weight 350 lbs.; the cow yielding in milk 4,000 lbs. The cow does not gain in flesh, but uses all her surplus food in making milk. Now, if we suppose the steer and cow to have each consumed the same amount of food, ought not the product of each to be the same in quantity of dry substance? But the 350 lbs. of live weight on the steer is composed of at least 60 per cent. water and 40 per cent. solid matter, or 140 lbs. of solid substance gained by the steer; while milk is 87 per cent. water and 13 per cent. solid substance—making 520 lbs. of solid substance contained in the milk produced by the cow from her food, to 140 lbs. produced by the steer. The cow, being a good milker, may have lost some flesh, but not enough to account for the great difference in product. The cow and the steer alike must supply the waste of the system; and, being of the same weight at the commencement of the season, this waste must be nearly the same. We are thus forced to the conclusion, that the cow more perfectly utilizes her food than the steer; and we are confirmed in this conclusion by the fact, that the droppings from milch cows are considered much less valuable as a fertilizer than that from steers or cattle feeding for beef. Market gardeners have often mentioned this fact to us; and they are much more observant of the effect of manures than ordinary farmers.

This is an interesting subject, and needs more accurate tests—such as weighing the food eaten by the cow and steer throughout the whole experiment, as well as noting the weight of the animals at the beginning and end; accurately weighing the milk and determining its water at regular intervals, so that an accurate determination could be made as to the product of the food in each case. The actual difference in the product is very great; but it may not be as large, proportionately to the food, as it appears, since the comparative amount of food consumed by the cow and steer may not be so near alike as is generally supposed. Yet, it is very evident that the cow, in milk, does more perfectly utilize her food, and make a greater return for it, than the beef animal, as will be seen by the following facts; A good cow will make 200 lbs. of butter in a season, and the skim milk, fed to thrifty pigs, will grow 200 lbs. of dressed pork; or, the same skim milk fed to a calf will put on at least 200 lbs. live weight. A good steer, fed in the ordinary way, will dress 800 to 1,000 lbs. at four years—having grown, on an average, 200 to 250 lbs. of meat each year; whereas the cow has made 200 lbs. of butter (a valuable article of food,) and the refuse of her milk has produced nearly as much meat in pork, or growth of young beef in the calf, as the average growth of a steer per year. Or, by another mode of illustrating it, if we compare milk with the average composition of lean beef and fat beef, we find the beef to contain 46 per cent. of dry substance, including the mineral or ash, and milk to contain 13 per cent. Thus, 3½ lbs. of milk is equal to 1 lb. of meat; but, if we allow 4 lbs. of milk to equal 1 lb. of meat, and on an estimate a cow to give 4,000 lbs. of milk in a year, this would make the cow's product in milk equal, in food value, to 1,000 lbs. of meat; and this 1,000 lbs. of meat would require a steer, under ordinary feeding, four years to produce—so that the cow produces as much return from her food in one year as a steer in four. This is a remarkable conclusion; but the facts appear fully to back it. We should be pleased to receive the views of any of our scientific readers upon this subject.

Selection and Care of Boars.

Dr. Janes, the Commissioner of Agriculture of Georgia, has published a *Manual of the Hog*, from which we extract the following:

The prudent planter is careful to select his planting seeds from well developed, prolific plants, and, each year, saves the best seed for future planting,—recognizing the law which pervades the whole vegetable kingdom, that "like begets like." This law is equally applicable to the animal kingdom, and should be as carefully observed, but has been sadly neglected by the farmers of Georgia.

It is the generally received opinion among stock breeders, that the boar exerts a controlling influence upon the offspring. This is especially true, when a pure-bred boar is used with a grade or common sow, and hence the selection of the male animal is of prime importance to the Georgia farmer, as he must look, mainly, to the introduction of full-blood boars to be used on the common sows of the country, for the improvement of his stock. He must remember that the defects, as well as the good qualities of the parent, are propagated in the offspring. The boar should, therefore, be *healthy, vigorous*, and, as nearly as possible, *perfect in form*, having the most desirable parts well developed, and he should be of a breed so well established as to propagate, uniformly, his peculiar type. The only breeds from which selections may be safely made, as being well established, and adapted in characteristics, including color, for farm hogs, are the Essex, Berkshire, Poland China, and Jersey Reds. The Jersey Reds will, perhaps, be best for crossing, where woods range is relied upon as the main support of the growing hog. The boar should be masculine in form, but without too great enlargement about the shoulders. The most valuable parts, such

as the ham, side, and jowls, should be well developed, the ribs well arched, giving broad back, and well-rounded body, affording ample room for the vital organs, and, consequently, a vigorous constitution. He should be thrifty, maturing early, and capable of being fattened at any age. He should be energetic, and sufficiently industrious to take the necessary exercise to gather his food from the crops cultivated for him, on our farms.

The result of the first cross of a pure-bred boar on large native sows, will often produce offspring superior in size and even appearance to the full blood, and farmers are tempted to select males from these grades for breeding purposes. This will invariably lead to disappointment, since the grades, while they have inherited the good qualities of the male parent, have not the power of transmitting these to their offspring.

The young boar should be fed all that he will eat until he is a year old, but not allowed to get too fat. He should have exercise, and a varied diet, such as grass, roots, and meal, but not allowed to run with sows, or serve any, before he is at least ten months old, when he may be admitted to a limited number, but should not be allowed to jump more than once a day; nor should he be allowed to serve enough to materially reduce his flesh. One service is usually sufficient to impregnate a sow—more than two should not be permitted, as it is an unnecessary drain upon the boar, and does not increase either the number or vigor of the pigs.

If the boar is allowed to serve at irregular periods during the year, one will answer for a great number of sows, but as the service should be confined to a short period in fall and spring, in order to have the litters come as nearly as possible at the same time, there should be a boar for every ten sows. During the period of serving, the boar should be kept in an enclosure to himself, and the sows turned to him in the morning, and removed as soon as served. After the first year the boar will not require very rich food, but should be kept in good, thriving condition, and allowed plenty of exercise.

He will be in full vigor generally until three or four years old, and, if very superior, may serve even longer; but should never be allowed to serve his own progeny. It is usually better to either exchange for a younger boar, or convert into pork after the third year. A number of small farmers in a neighborhood could purchase a boar for joint use, and thus make the cost light on individuals; or, if one owns a superior boar, let his neighbors bring their sows to him, and pay a reasonable sum for each service. English breeders pay a sovereign ($4.84) for such service. A farmer who has only the common stock, had better pay *five dollars for the use of a thoroughbred* than *accept the service of a grade or common boar for nothing.*

A mistake, very common among inexperienced breeders, is to confound cross-breed with thoroughbred. The offspring of a Berkshire boar upon an Essex sow is cross-bred, not thoroughbred. It is neither Berkshire nor Essex, and is not capable of transmitting the good qualities of either. They make good pork hogs, but are not a proper source from which to draw stock hogs for breeding purposes.

The general use of Berkshire boars in the State would probably increase the average weight of butchered hogs thirty pounds. There are about 1,000,000 hogs butchered annually in Georgia. An increase of thirty pounds per head would give an aggregate increase of 30,000,000 pounds, worth, at 12½ cents per pound, $3,750,000.

Pig Feeding.

Prof. Shelton, of the Kansas Agricultural College, makes the following remarks:

If we may judge from the general tenor of the agricultural papers, this subject is one that just now greatly interests the farmers. Every one who reads attentively his agricultural papers must have noticed the surprising number of speeches, addresses and papers upon the above subject, which have appeared within the last six months. But in every case, so far as I have observed, the subject is *pig* feeding, not hog feeding. The truth is, no one can afford to keep swine until they are a year and a half old for pork; and this fact is, or ought to be, patent to the understanding of every farmer. Except for breeding purposes, the hog is destined to become obsolete at no distant day. The great advantage, although not the only one, possessed by the improved breeds, is their ability to fatten when they are pigs. Further, they are great consumers of food, while they waste but little. To make good pigs, the pigs we "read of," it is only necessary to have good blood to start with, and then feed abundantly of the most nutritious foods. That animal which consumes the most food, other things being equal, will be most profitable. We ought to remember that the object in soaking, grinding and cooking food for domestic animals is to make their foods more palatable and digestible; to make the animals eat more, in short.

To get the best results from pig feeding, the animals must be fed often. Pigs should never be fed less often than three times each day, and he who would obtain the most rapid development of his animal, as well as the best returns for food consumed, ought to feed no fewer than five times each day.

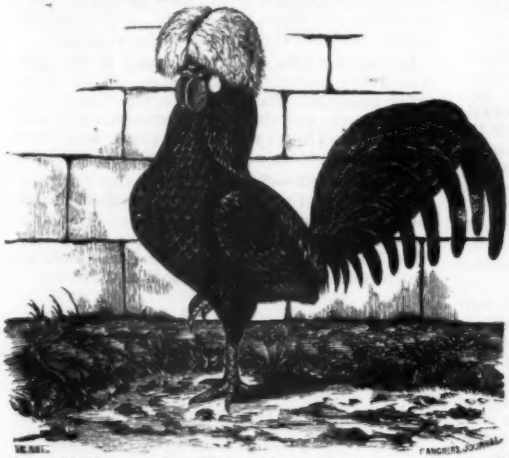
A Year's Losses by Swine Diseases.

The statistician of the department of agriculture reports that during the last year 4,000,000 swine of all ages have died from disease, with a money loss of more than $20,000,000. One-fifth of the entire loss was in Illinois; while Missouri and Indiana together lose $10,000,000. Florida, Alabama, Mississippi and Louisiana have nearly as large a percentage of loss in numbers, aggregating $1,500,000, but in New England the losses have been very small.

With proper veterinary inspection, there is *no doubt* that all but a very small percentage of this enormous amount of loss might have been saved to the farmers, and the money so lost in *one year* would amply provide for such inspection over the whole of the United States *for* 100 *years*,—apparently incredible, but true, nevertheless.—*Scientific Farmer.*

Polish Fowls.

We last month gave an illustration of a white-crested Black Polish Hen, and in order to exhibit their general appearance we have secured from the *Fanciers' Journal* a fine electrotype of the male bird of this variety, which we now give with this article. By comparing the two, a more accurate idea may be formed of their grand appearance, with a bright green lawn for a back-ground. Having had several letters asking about the other varieties of the Poland family, we will in this connection give a brief sketch of them.



The Poland or Polish fowls are supposed to have been first imported from Holland, where *only* the blacks with the white crest were known. There are three other varieties, as follows: Golden, silver, and pure white, and these three varieties are also bred, in some cases, with heavy muffs or beards, similar to the Houdans. It can hardly be claimed as an improvement to their beauty, as the bearded birds appear to look ungainly and clumsy,—to our idea, the characteristic Poland appearance entirely destroyed. But tastes differ.

The golden Poland (in color) are a deep golden bay, the feathers ending with a black crescent spangle. The silver, a metalic white ground, each feather ending with a black spangle. The white variety are a trifle smaller than the others, and by some said to be less hardy. About forty years ago, one Dr. Bechstein (in Europe) had some *white* Polands with a *black crest*. The variety, however, for some unexplained reason, seems to have been short-lived. Many think *nature* in this case was outdone, or at least materially *assisted*—that the crests were *dyed*, perhaps. Experienced breeders have tried to make this variety in this country for thirty-five years, without yet meeting with any encouraging results. G. O. B.

Two Wonderful Fowls.

Maryland just now has two fowl sensations. One is a male bird with two horns growing out of the top of his *head* or *comb*. I examined him and find these horns are in composition identical with spurs usually found upon fowls. It is certainly a very peculiar freak of nature. Number two is a great laying hen. I won't pretend to state the fabulous *stories* about her laying—only say that it is claimed she did lay *forty* eggs in three days. The story is vouched for by intelligent and responsible witnesses. I am investigating, and only *ocular* demonstration will convince me.—The result will be made public. G. O. B.

Poultry-judging at Fairs, &c.

I understand that at the approaching Maryland State Agricultural Show there will be an unusual fine display of thorough-bred poultry. The committee has adopted the premium list used by the Maryland Poultry and Fanciers' Association. I sincerely hope more attention will be given to selecting and securing really *competent* judges than has heretofore been the case. At the last Pimlico exhibition a pair of Partridge Cochins were awarded *first premium*, which would at a regular poultry exhibition have been disqualified. Some very choice birds of this breed, owned and exhibited by the same party, were entirely ignored by the judges. This certainly is a poor way to encourage the breeder, or to elevate the standard of pure-bred poultry.

The American Poultry Association have judges, and competent ones, in every State. And perhaps when it is known that *fanciers* do *not* recognize a premium awarded at the agricultural exhibitions, unless judged by a regular poultry judge, that exhibitors will demand that their stock be judged by an expert instead of a novice, or a committee that do not even know how many points constitute a first-class bird. One thing is certain: farmers or any one else never will be "posted" regarding improved breeds of poultry if they draw their information from such sources, or by studying the prize (?) fowls that *win* (?) at these shows. These *winners* are duly heralded with flaming circulars of "*first prize stock*," somebody's *noted* strain, &c. Eggs are sold to verdant would-be fanciers, the hatch from which is a living libel on honest fanciers who are endeavoring to introduce reliable, carefully-bred, pure stock.

I was glad to see your most excellent and pointed letter on agricultural colleges (?) and bad as reform is needed there, it is also at our agricultural exhibitions. Yes, we want agricultural colleges, run in their legitimate channels; agricultural shows conducted outside of *horse-racing*, and we want poultry judged in accordance with the American standard of excellence. Shall we have it? If not, *why* not? GEO. O. BROWN.

Montcue Poultry Yards, Brooklandville, Md.

The Dorkings as a class may be considered the standard English fowl, and combine more general qualities than any other; regular sitters, large size, plump, square built, delicate flesh, and highly-flavored.

Work for the Month—August.

Less pressing work now demands attention than at some other seasons, but there usually is plenty to do.

Plowing for Wheat should be forwarded as soon as circumstances will allow. Early plowing permits the ground to become firm, and thus gives the compact seed-bed which is favorable to wheat. Deep plowing is a preventive of the evil of winter-killing, giving escape to superfluous moisture otherwise apt to rest on the surface, and allowing free penetration by the roots.

Rye.—Some of our farmers sow this towards the latter part of this month. Generally, however, when sown for the grain, it is not seeded until September. For cutting green for early feeding, or for pasturage, it is as well to sow early, and successive sowings may be made with advantage where considerable stock is kept. Intended for these purposes two bushels of seed to the acre is not too much, but one is enough for a crop of grain. A sandy loam best suits this crop, but the land should be in good condition. The demand for the straw frequently makes the crop a better paying one than wheat—the straw sometimes bringing a price as high as timothy hay.

Buckwheat for turning under as a green manure may be sown up to the middle of the month, and the grain may escape the frost if sown at once.

Tobacco.—Until the leaves interfere, the cultivation should be kept going, and the crop should be laid by clean of grass. Look out for the worms. Top as the growth progresses, and take out all suckers before cutting.

Turnips may be sown during the month. The best time is about the 20th. The flat strap leaf, white or purple top, is most used here,—a pound of seed sown broadcast being enough for one acre. A good super-phosphate is especially suited for the turnip, and a dressing of 200 lbs. to the acre will give them a vigorous start and make a crop in ordinary seasons.

Timothy.—A good loam, with a considerable portion of clay, best suits this grass, and it should be in good condition, deeply plowed, and, if possible, deeply subsoiled. The harrow and roller should be used to produce the finest tilth attainable. Of fertilizing applications, none are better than bone-dust and meal; super-phosphates; mixture of ashes, plaster and salt; and, of course, barn-yard manure. On average soils a peck of seed is sufficient for one acre. Sow carefully to secure uniform distribution, dividing the seed and sowing in cross directions, and cover with a light harrow or brush. It is the practice of some farmers to sow turnips with their timothy, and one of our correspondents recommends turnips and orchard grass. The timothy seed is not sown till the turnips are up, when a light harrow run over the field covers the seed, and, at the same time, cultivates and thins the turnips.

Manures and Composts.—Attention to the accumulation and preservation of these should be zealously given during the warm season, when organic substances quickly ferment and decompose, and, if left uncared for, are soon lost. At no other season either are materials more abundant, and great pains should be taken to collect all kinds of animal and vegetable matters and add them to the compost heaps.

Grass Lands.—A top-dressing of fine and well-rotted manure, composts, or of fine bone, super-phosphate, &c., can be applied now with great benefit, and should be harrowed and cross-harrowed. Timothy, orchard grass and other seeds may be sown at the same time.

Live Stock.—See that the sheep are regularly salted, and provide tar in their troughs that they may be protected from the fly. Have the horse-stables darkened to guard against flies. Give the cows in pasture some extra feed, for which nothing is better than fodder-corn.

Horticulture.

The American Pomological Society.

The meeting of this society, on the 12th, 13th and 14th of September, and the Annual Exhibition of the Maryland Horticultural Society from the 11th to 14th inclusive, will be held in the Armory of the 5th Regiment of the Maryland National Guard, on Howard and Biddle streets in this city,—the use of the same having been courteously tendered by the officers of the regiment, and permission granted by the city authorities for the erection of an additional wing on either side of the main building, which will double its capacity.

These wings or annexes will each be 36 by 180 feet, and the total floor area for the display of fruits and the usual horticultural exhibits of our State Society will be about 26,000 square feet, besides the galleries (which will be reserved for lookers-on, promenaders, &c.,) and various committee rooms, &c.

The sessions of the Pomological Society will be held in the upper hall of the armory, or in case of its capacity being exceeded by the number of members and delegates in attendance, then a larger hall in the neighborhood will be used.

The Proposed Virginia and Maryland Vine-Growers' Association will be furnished, by the Maryland Horticultural Society, suitable and ample accommodations for its meeting in the same building with the Pomological Society.

The Potomac Fruit-Growers' Association will hold its August meeting and exhibition on the 7th, on the steamer "Mary Washington," which will leave the foot of 7th street at 9.30 A. M. Dr. J. E. Snodgrass, the secretary, will read an essay on "Fruit Culture in its Relations to Health."

Potomac Fruit-Growers.

JULY MEETING.

Editors American Farmer:

On the sample tables were fruits as follows: *Apples*—E. Rose Astrachan. *Apricots*—E. Golden. *Mulberries*—Downing's. *Cherries*—Late Duke, Belle Magnifique, Coe's Late Carnation, Vail's Auguste (an Albany fruit ripening here a month early) all of good quality. *Gooseberries*—Downing, Houghton, E. Kent Utch. *Raspberries*—Turner, Ganargua, Clarke, Golden Thornless, Brandywine, Philadelphia. The fruits are the best for market. *Currants*—Davies White, Long-branched, R. Dutch, Prince Albert, Bl. Naples.

President Gillingham read a paper on the climate of the Potomac region and its adaptation to fruit, in which he quoted a letter from Sir Jno. Sinclair to Gen'l Washington, asking: "What part of America is most desirable as a place of residence for a British subject?" And Washington's reply in substance: "The region between the Susquehannah and the Potomac rivers, in soil, climate, and productions may be considered the *garden of America*."

The president then ran over the various fruits, and said: "we can raise here successfully nearly all the fruits found growing outside of the tropics, and pleasant homes, wherein to enjoy them."

As confirmatory of this, he gave the mean temperature of this region (the Potomac) for each season for the past seven years, to wit:

For the winter months	33° 29′
" spring "	50° 47′
" summer "	76° 30′
" autumn "	48° 01′

Mean rainfall for the United States for the year ending June 30, 1876, 45.18; for Washington, D. C., 48.01.

These figures show that we are between the extremes of heat and cold, and consequently have one of the best fruit regions in the world.

Professor Brainard addressed the society on preserving and canning fruits. In these processes certain chemical laws must be observed in order to avoid the errors by which the natural and delicate flavor of the fruitis not only disguised, but in many instances the fruit itself is made positively poisonous. Don't use, in cooking or preserving fruit, copper or brass, or iron or glass, earthenware kettles, but use porcelain-lined. Don't use tin cans for your fruits, for the solder of the joints contains lead or mercury, and the acids of the fruit will decompose them and poison the fruit, but use either glass, with glass stoppers, or stoneware.

[*Note by reporter*—Mr. Gillingham's paper and Brainard's address are published in pamphlet form *in extenso*. Parties interested may procure copies of me by enclosing address with stamp to prepay.]

Washington, D. C. G. F. NEEDHAM.

The Strawberry Crop in Virginia.

From data furnished by the agents of transportation companies of Norfolk, to Mr. G. F. B. Leighton, it appears that the strawberry crop of the past season foots up over 1,000 quarts more than three millions from that vicinity:

	QUARTS.
To New York	1,332,850
Boston	551,600
Philadelphia	383,475
Baltimore	451,679
Interior of Virginia	386,747
Washington	79,900
Providence	25,750
Domestic consumption	90,000
Total	3,001,026

Mr. Leighton says: Mr. J. R. Young, Jr., is probably the largest strawberry grower in the world, he having picked this season three hundred and seventy-five thousand quarts from one hundred and eighty-five acres of land, nine-tenths of which were of Wilson's Albany variety.

Seventeen hundred pickers were the greatest number employed any one day.

His average is a fraction over two thousand quarts to the acre. Another party reports a fraction over three thousand quarts to the acre; but the land was in the highest tilth.

From the opinion of our most experienced cultivators fourteen hundred quarts is a fair average yield per acre for this season, showing that we have about two thousand and eighty acres in strawberry culture. These figures do not include the counties of Northampton and Accomac, whose outlet is by other lines.

If Mr. F. Davis will furnish Richmond products and C. Gillingham, Esq., will furnish the Potomac side of the State, we can show what Virginia has done this year and invite comparison with other States at the session of the American Pomological Society in September next at Baltimore.

In 1868 our strawberry export data was less reliable than this season, and was regarded as rather full when placed at one million quarts. The recuperative power of the Wilson Albany berry from early frosts and its great productiveness bids fair for an adieu to all other varieties for market purposes.

A rare occurrence happened this season: a heavy picking from here met a heavy picking from Maryland, resulting in a breaking down of the market, which will ultimately prove bread cast upon the waters. Thousands of families have purchased them on account of cheapness who have never before indulged in the luxury, only to find that hereafter they are a necessity. The past fifty years reveals strides in this fruit truly astounding, completely heading the page of Horticultural progress, and it seems wonderful how demand keeps pace so closely with supply.

Floriculture, &c. —August, 1877.

By W. D. BRACKENRIDGE, Florist and Nurseryman, Govanstown, Baltimore County, Md.

Greenhouse.

The majority of Flora's votaries do not usually turn at this season of the year to the heated atmosphere of the greenhouse or conservatory to have their tastes regaled, yet in well-managed depositories of this kind are now to be seen assemblages of plants in flower, calculated to entrance and captivate the eye, so as to make the spectator entirely forget for a time the inconvenience of the climatic influence to which he may have subjected himself.

We have on frequent occasions recommended for summer decoration of the greenhouse such genera of plants as Achimenes, Gesnerias, Gloxinias and their allies; and the estimation we had formed of their adaptability for such a purpose has been successfully verified by the gorgeous display in July of Gloxinias at the private establishments of Wm. H. Perot and Ernest Hoen, Esqrs., of Baltimore Co., and we can truly say, that during fifty years observation both at home and abroad, that it has seldom been our lot to witness such an assemblage of floral beauties, embracing from 40 to 50 varieties—among which were flowers exceeding 3 inches in length by 3¼ inches across the lobes of the corolla; in many the colors were various, the tints blending softly into each other; while in others, the tube outside was of intense scarlet, with the throat spotted inside—while the lobes of the corolla would be of pure white; again, some would be of pure purple, with small white spots in the throat, and the lobes pink; in fact all shades of color were represented, save that of pure yellow and black. What appeared to us as a departure from the normal habit of the old species, consisted in many kinds producing flowers that stood erect, while in the former the tendency is and was of a drooping nature; some of those whose colors appeared the most delicate, were what we would call flimsy in texture, or, as florists would say, they "lacked substance." The tubers of Mr. Perot's collection were, we believe, imported from Europe; while Mr. Hoen's plants were raised by him from seeds procured in Belgium.

However much we dislike being considered egotistic, yet we claim that our own discovery abroad tended much to the breaking up of the blue and white colors which formerly prevailed in this genus, by our having found when in Brazil, in 1838, only one tuber of what is now well known as Gloxinia rubra; this was sent by us to the United States, and after being multiplied was sold to European growers, and very soon afterwards was figured by Van Houtte as a species, when in fact it is only a red variety of G. Caulescens, mixed up with which I found it growing on a dripping rock at the base of the Corcovado, near Rio de Janeiro. This habitate Mr. Van Houtte doubted, he having had a plant collector living out there; and I had very good reasons at the time when the species was by him published, of not affirming and claiming the right of discovery; the same reasons do not now exist.

To grow these plants well, a warm humid atmosphere is necessary, making use of a mixture of leaf mould, old cow-manure and sand; and by all means drain the pots well, so that water does not stagnate about the tubers. They are easily propagated either by seeds or cuttings; by the latter method the same kind is multiplied, and the process is effected by inserting the stem of the leaf in a semi-horizontal position, in a mixture of leaf-mould and sand, then cut the mid-rib across in two or more places, pegging the leaf flat to the surface of the ground, afterwards placing a little sand on the leaf over where the cut or break beneath was made; and if this work is properly done, and attention paid to keeping the whole in a warm shady place, as many as 3 to 6 tubers may be secured from one leaf, and these if proper care is afterwards taken of them will bloom the following year.

Young Caladiums as they grow will require to be shifted into larger pots, and as the roots begin to fill the pots a free supply of water should be given them.

Stevias and Eupatoriums, destined for winter flowering, ought to have the loose branches pinched back so as to secure bushy plants, keeping the pots plunged in an airy situation where they should receive once or twice every week a dose of liquid manure; observing to shift into larger pots as the plants advance in growth, so that when the housing season comes they will stand in pots known as sixes.

The cultivator should be diligent in subduing insects, for that purpose making free use of water by syringing overhead, and frequently it will be found that water will not conquer the pests; then a little whale oil, soap, tobacco liquor or hellebore powder may be added; we sometimes put in a few drops of kerosene oil, but the latter ought to be appiied with caution.

LAWN AND PLEASURE GROUNDS.

There are some people who own country retreats, whether large or small, who never have their places what we would call tidy; they may have the grass on the lawn cut short, but if you make good use of your eyes, abundance of dead leaves and decayed wood on the bushes and trees will be found; while the walks, roads and flower beds are scarcely distinguishable from the lawn, by the crop of weeds and grass permitted to spring up.

On the other hand, we often see the walks and flower-beds in good order, with the grass on the lawn standing ankle or knee high. All such contrasts are discordant, and little pleasure can be derived from the possession of such a place. This state of things comes very often, not so much from the want of means to keep it up as the lack of good management; or, if you will have it, of administrative talent, in not having the various branches of the work performed in detail until the whole is finished. By attending to such work at the proper time, a vast amount of labor may be saved.

All hedges of Pyracanthus and Washington Thorn, Japan Quince, Privet and Osage Orange, should now receive the last trimming for the season. The rambling branches of Chrysanthemums ought also to be pinched back, for if this is delayed much later the chances of their blooming will be much lessened, and should the weather continue dry it will be necessary to give Dahlias a good soaking of water, at least twice every week, while attention should be paid to tieing the heads up to substantial stakes.

To maintain the beauty of the flower garden, it will be proper still to plant where the Tulips and Hyacinths grew, such things as Annual Phlox, Portulaca and Petunias, as such will bloom well in late fall. We sow Gladiolus seed as soon as it is ripe, in boxes or beds of rich light earth. These will make their appearance in early spring, and many will show flower in the second and mostly all of them in the third year. Seeds of Liliaceous plants do best if sown as soon as they ripen; for if dried and kept over, the seed is tardy

in sprouting, and some kinds after being thoroughly dried will not afterwards grow at all.

So far as we have seen, there has evidently been a mistake committed by our horticulturists in not having adopted for cultivation in their gardens some of the charming and profuse blooming hardy perennial herbaceous plants, now easily to be had, many of which claim the first rank in flower-garden decoration, and of these we shall for the present only name a very few. And first, as a useful plant for cut flowers, we mention the Valeriana rubra and var. Alba. These come into bloom in June, and never fail in producing their fine feathery flowers until sharp frosts set in. The next is Delphinium sinensis—both single and double—in many varieties, of an intense blue down through a mauve to a pure white, yielding flowers during the most of summer. Then we have the double varieties of Spiræa aruncus, S. ulmaria and S. filapendula, popularly known as "Meadow Sweet." As a double white flower continuing in bloom during the hottest of weather, is the Achillea Ptarmica fl. pleno; this to the florist is an invaluable plant, affording white flowers for wedding and funeral bouquets at a season when such flowers are scarce. To grow it well you must give it strong rich land.

Vegetable Garden.

August.—Fill the spaces left by matured crops with such late kinds as cabbage, turnips, spinach, &c.

Beans for pickles may still be planted. Transplant celery, for which the ground should be rich. If the plants have been properly topped in the seed-bed there will be little trouble with them, but they should be well watered if dry weather ensues. Work cabbage and cauliflowers, and draw the earth to their stems. Lettuce may be sown in rich places for fall use. Sow spinach in drills 20 inches apart. Sow turnips, and, if the fly appears, scatter ashes, air-slaked lime or plaster on the plants.

The Product of One Grain of Wheat.

Editors American Farmer:

I send you a single bunch of wheat containing over 50 stems, all from one grain, which was raised by my young friend Chas. Eichelberger, formerly a dry goods clerk in our city, but now an *enthusiastic farmer* of Northumberland Co., Va., and who, from all accounts, will show some older heads how to make *farming pay*. I claim him as one of my converts to unammoniated manures. He has been using all the old dried bones of the neighborhood that were collected, converting them into available plant food by formulas given him some time ago. With a continuation of the determined energy and enthusiastic love of farming his correspondence manifests, I predict for him a great success on land that had long ago ceased to produce profitable crops. I hope he will write out the result of his experiments, so that some of us older farmers may profit by our young friend's success.

A. P. SHARP

Baltimore, July, 1877.

An Excellent Plow.

We had the opportunity of examining at Ashland (on the Northern Central Railroad, Baltimore Co., Md.) a lot of agricultural implements, manufactured by Messrs. U. G. Miller & Co., whose advertisement will be found on our advertising pages, and were struck with the appearance of some of his newly-improved plows, which appeared to be capable of doing excellent work, as was conceded by farmers who were present and had fully tested them. Their durability and cost also recommend them very highly, and we would recommend our friends who intend to do good plowing for their fall crops, to examine these implements and judge of their value.

The Pocket Geologist, by Mr. F. H. Smith, civil and mining engineer, a neatly-printed hand-book which was advertised in our last issue, contains a description, scientifically correct, but plainly written, of rocks, minerals, carbons, gems, spars, limes, clays, grits, salts and paints. It would answer equally well for a text-book, or for use as reference in the country, and deserves a wide circulation, from its compact but well-digested contents.

Fine Fultz Wheat.

Mr. Ric'd J. Baker, of the firm of R. J. Baker & Co., sends us from his farm near Freedom, Carroll Co., Md., a fine sample of Fultz wheat, 17 heads of which weighed 1½ ounces—a little light. The crop was raised on corn ground, which was plowed and harrowed, and 500 lbs. fine-ground bone drilled in to the acre with 1½ bushels wheat and 1 peck of timothy seed, and then rolled. The wheat was ripe as soon as any in the neighborhood, and earlier than some. The land was thin, but the timothy set well.

Cure for Poison Ivy.

I have probably suffered more from poison ivy than any other man. Three times during one summer I have been blind from its effects. I have tried every remedy without success, until last summer. I was out East shooting, and, with my usual luck, I got another dose that confined me to the house. I could not walk. An old fox-hunter living in the neighborhood, hearing of my sad condition, came to see me and brought me a remedy that acted like magic. In three days' time I was up and enjoying what I love better than anything else in this world, the best of all field sports—fall woodcock shooting. I give you the receipt:—Take one pint of the bark of black spotted alder and one quart of water, and boil down to one pint. Wash the poisoned parts a dozen times a day, if convenient; it will not injure you.—*Forest and Stream.*

The American Farmer.

PUBLISHED ON THE FIRST OF EVERY MONTH

BY SAML. SANDS & SON,

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One Page.....	20.00	45.00	75.00	120.00

Cover Pages subject to special contract.

Transient Advertisements payable in advance—all others quarterly.

Advertisements should reach us by the 27th of the month, to secure insertion in the succeeding issue.

AUGUST 1, 1877.

REMOVAL.

The publication office of the AMERICAN FARMER has been removed, on account of improvements in its former quarters, to No. 128 W. Baltimore street, over the Bulletin office, and nearly opposite the American and Sun buildings. We shall here be pleased always to see our friends,—new and old.

Meeting of Agricultural College Stockholders.

The call for this meeting for the 9th instant, as published in one of the city dailies, is given elsewhere.

An effort will be made to supersede the present board; and, that no misconception may exist as to the policy of the opposition, there will be a clear statement of its purposes.

We think this may be expressed as a resolve to make the institution distinctively a place of instruction and training for young men who mean to live by farming, or by other industrial pursuits closely connected with farming. In following out this purpose, while general education will not be neglected it will be held subordinate to the main object of the college, which is special and technical instruction in agriculture and the mechanic arts relating thereto. Above all it will be the purpose to encourage labor, by making it respectable through its union with intelligence; and by accustoming all the students to manual labor as an important part of their every-day life.

This will of course involve the placing at its head of a man in entire sympathy with the pursuit, and of personal acquaintance with the present requirements, of agriculture; the abandoning of the reception of pupils preparing for the United States Military and Naval Academies; and the relegation of the military features to their proper and subordinate place. In the out-door departments, to make the experiments not only serviceable as illustrations to the students, but of direct benefit to the farmers of the State by the determination of the value of processes, fertilizers, machines, &c.

In short, the aim of the gentlemen whose names are presented will be (if elected) to make the institution an agricultural one in every field of its operations,—ministering to the advancement of agriculture, to the enlightenment of our citizens engaged in its practice, and to the adequate education of our youth who are to become so engaged in the future.

We may add that measures are under consideration which, if the opportunity is given for carrying them into effect, cannot but redound to the permanent prosperity of the college and to the signal advantage of the agricultural class; and that such gentlemen will be invited to places in the administration as will command the respect and confidence of our people and their earnest support.

Fertilizers for Fall Use.

Messrs. J. J. Turner & Co. submit various testimonials as to the efficiency of their Excelsior, some of them during tests of several years continuance and on grass as well as on grain.

By the announcement they make it will be seen that they propose now to sell their products at the actual commercial value of the various elements of plant food which they contain. The calculations they present in their notice deserve attention, and the practice of stating the actual total value of the several ingredients deserves imitation by other manufacturers.

Besides the firms named last month, the Popplein Company offer their Silicated Phosphate, with Prof. Genth's estimate of the value of soluble silica; Messrs. R. J. Baker & Co., their superphosphate and chemicals for home-made fertilizers; Messrs. P. Zell & Son, their Super-phosphate and "Economizer;" Mr. A. G. Griffith, his "Great American Fertilizer;" Messrs. J. M. Rhodes & Co., their "Standard Manures, for All Crops."

Messrs. P. S. Chappell & Son advertise several brands of their Wheat Fertilizers and Dissolved Bone Ash, Acid Phosphate, &c.

Maryland Wine.

By the thoughtfulness of Mr. C. T. Schmidt, who has a very pleasant habit of doing such things, we were lately recipients of a box of white wine from his Montrose Vineyard, near Avalon on the B. & O. R. R. We do not know from what grape it was made, but, to our taste, it is unquestionably the best American wine we have ever drunk, with a character so entirely its own, we think it cannot but speedily become a favorite when put upon the market.

A Correction.

In the paragraph of the "open letter" on page 251 of the July *Farmer* under the title "grounds of opposition," the text should have read, "as a rule they did not care about any higher education than that afforded by the country schools, *for those who were to remain on the farm.*"

The omission, in hasty preparation for the press, of the clause in italics, made it an unfair representation of the objections made.

State Fairs, 1877.

American Pomological, Baltimore, Sept. 12—14.
American Institute, New York, Sept. 12—Nov. 12.
California, Sacramento, Sept. 17—22.
Chicago Industrial Ex., Chicago, Aug. 29—Oct. 13.
Georgia, Atlanta, Oct. 15—20.
Illinois, Freeport, Sept. 17—22.
Indiana, Indianapolis, Sept. 24—29.
Iowa, Cedar Rapids, Sept. 17—22.
Kentucky, North Florence, Aug. 28—31.
Maine, Portland, Sept. 3—7.
Maine Pomological, Waterville, Sept. 25—28.
Maryland Horticultural, Baltimore, Sept. 11—14.
Michigan, Jackson, Sept. 17—22.
Minnesota, Minneapolis, Sept. 3—8.
Missouri, Kansas City, Sept. 17—22.
Nebraska, Lincoln, Sept. 24—28:
Nevada, Reno, Oct. 15—20.
New England, Portland, Sept. 3—7.
New Jersey, Waverly, Sept. 17—22.
New York, Rochester, Sept. 17—21.
Northwest Exposition, Dubuque, Iowa, Sept. 10—14.
Ohio, Columbus, Sept. 10—14.
Ohio Southern, Dayton, Sept. 24—28.
Oregon, Salem, Oct. 8—13.
St. Louis, Mo., St. Louis, Oct. 1—6.
Texas, Austin, Oct. 9—13.
Virginia, Richmond, Oct. 30—Nov. 3.
West Virginia, Clarkesburg, Sept. 12—14.
Wisconsin, Janesville, Sept. 10—14.

National Agricultural Congress.

The sixth annual session of the National Agricultural Congress will be held at the Grand Pacific Hotel, in the city of Chicago. All Agricultural Societies, Boards of Agriculture, Agricultural Departments, Agricultural Colleges, Agricultural Periodicals, Granges, Farmers' Clubs and other organizations whose object is the promotion of Agriculture, in the United States and in British America, are requested to send delegates; and all persons desiring to promote the objects of the Congress are cordially invited to attend and to participate in its deliberations.

Specimens of Agricultural Products—such as the Small Grains, Corn in the Ear, Fruits, Nuts, Seeds, Grasses and other Forage Plants, Tobacco, Hops, Cotton, Hemp, Flax, Sugar, Wool, Dairy Products, etc., are solicited for exhibition and for the comparison of the similar products of different parts of the country.

Papers and addresses on a great variety of topics of interest to the farmer, will be presented by persons eminently known over the country. The Grand Pacific Hotel will be the headquarters of the association, and the sessions will be held there. In the interim, the Secretary, Horace J. Smith, may be addressed for information, at Philadelphia, Pa.

Hon. W. C. Flagg is the President of the Congress, and Wm. B. Sands, editor of the *American Farmer*, Vice-President for Maryland.

Heavy Wheat Yield.

Mr. Henry S. Lankford, who resides about four miles from this town, sowed four bushels of wheat on three and a half acres, and threshed out 125 bushels. This is the best yield we have heard of in this county for a long time. The yield was 31¼ bushels to the bushel's seeding, and 38 bushels to the acre. We asked Mr. Lankford what kind of fertilizer was used, being anxious to give our readers the benefit of his good judgment, and he informed us that he used one bag of Whitelock's Vegetator to the acre. We have often heard of the good qualities of this fertilizer. We would advise more of our farmers to give this manure a trial. Mr. Whitelock's place business is 44 South street, Baltimore.—*Princess Anne (Md.) Somerset Herald.* *

A New Invention, and Interesting to Farmers.

Mr. A. G. Griffith of our city has obtained letters "Patent" for an invention that is likely to prove invaluable to the farming interests of the country. It is the concentration by a patent process, of all the mineral and chemical properties of "Horse Manure," by which the straw, fibrous and organic matter are burned up as if by firs; while all the mineral elements, and essential qualities of the manure-containing nutriment for plant-food are retained without the loss of a single atom.

By this process a cart-load of "Horse Manure" with its liquids is reduced to the compass of a barrel; the mass thus reduced is assimilated with bone, which is dissolved thereby; when by chemical process the mass is dried and ready for use.

Thus every property of plant-food has been retained, the waste matter expurgated, and no article is used that is not of itself a first-class fertilizer.

It is known by the name of "The Great American Fertilizer," and as such, must have a brilliant future.

(*See advertisement elsewhere.*) *

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Baltimore Markets—July 31.

Quotations given below are Wholesale Prices:

Breadstuffs.—*Flour*—Dull and heavy, and lower prices looked for. We quote Howard Street Super $4.50@5.25; do. Extra $5.50@7.50; do. Family $8.25@9.50; Western Super $4.50@5.25; do. Extra $5.50@7.50; do. Family $8.25@9.25; City Mills Super $4.50@5; do. standard Extra $6@7; do. medium Extra $7 75@8; do. Rio brands Extra $8.50; Spring Wheat Flour $7.50@9; do. patent $9.50@10; Fancy brands $9.75; Fine $4@4.25; Rye Flour $4@4.50; Corn Meal, City Mills, ₩ brl. $3@$3.10.

Wheat.—Southern steady and firmer. Western dull. We quote Southern red, common to fair, $1.30@$1.50; do. good to prime $1.51@1.54; do. amber $1.55@$1.58; do. white $1.40@1.57; No. 2 Western winter red $1.55@1.58; do. August delivery $1.40¼; do. September delivery $1.36¼.

Corn.—Southern in moderate demand, with an easier market. Western dull and heavy. We quote Southern white 67 cents; do. yellow 65@66 cents; Western steamer, spot, 57¼ cents; do. mixed do. 63¼ cents; do. August delivery 61¼ cents; do Sept. delivery 61¼.

Oats.—Are steady. We quote: Western mixed, old, 45@47 cents; do. bright do. 48 cents; Southern, fair to good new, 35@38 cents; do. prime do. 42@43 cents; Pennsylvania, old, 46@47 cents.

Rye.—Steady, with sales at 65@67 cents for good to prime new, and 69 cents for prime old.

Hay and Straw.—Hay is in good supply, the new crop now coming forward pretty freely, and straw is also abundant, but for each the market is dull. We quote, viz: Hay—Cecil County $17@18; prime Penna. and Maryland $14@15; Western $13@15; mixed $12@$14; Clover $11. Straw—Wheat $7@8; Oats $9@10; Rye $13@14.

Provisions.—Firm and active. We quote: Bulk Shoulders, packed, 6¼@6¾ cents; do. C. R. Sides do. 8¼@8¾ cents; do. L. C. Sides do. 8¾ cents; Bacon Shoulders do. 7¼ cents; do. C. R. Sides do 9¼ cents; do. Hams, sugar-cured, 12@13 cents; do. Shoulders do. 9 cents; do. Breasts 10 cents; Lard, refined, tres. 10¼ cents; Mess Pork, ₩ brl., $15@15.75. *Butter.*—In good demand and firm, and receipts light, particularly of fine grades. We quote Western, choice, 17@19 cents; nearby Roll 12@16 cents. *Cheese.*—Steady and in moderate demand. We quote Eastern, choice new, 10¾@11¼ cents; Western, fair to prime new, 7¾@9¾ cents. *Eggs.*—11@12 cents for prime fresh lots. *Poultry.*—Young Chickens $2.50@3.50; old fowls $3@$3.50 ₩ dozen.

Tobacco.—Market dull and unsatisfactory. We quote Maryland, inferior and frosted, $2.50@3; sound common $3@4; good $4.50@6.50; middling $6.50@7.50; good to fine red $8@10; fancy $10@15; upper country $4@20; ground leaves, new, $3@8. Virginia, common and good lugs, $4@6 50; common to medium leaf $6.50@$8.50; fair to good leaf $9@12; selections $13@17; stems, common to fine, $1.50@3.

Wool.—Nominal. Good unwashed 31@33 cents ₩ lb. for coarse, 28@30 cents for fine, and tub-washed 41@43 cents for coarse.

Live Stock.—*Beef Cattle*—At the last market most offerings were of middle and lower grades, in which movements were fairly active, with quotations as follows; Best on sale $5.75@6.50; generally rated first class $5@5.75; medium or good fair quality $4@$4.75; ordinary thin steers, oxen and cows, $3.50@4. Milch Cows were dull at $27@45 ₩ head.

Swine.—Receipts light, and supply inadequate to the demand, owing to railroad interruptions. Sales were made at 7¼@8 cts. net.

Sheep.—Good sheep scarce. We quote butcher sheep 4@5¼ cents gross. Stock sheep $2@3 ₩ head. Lambs 4@6¼ cts. ₩ lb. gross.

NEW ADVERTISEMENTS.

Sam J. Sharpless—Southdowns.
E. J. Durnall—Berkshires.
J. J. Turner & Co.—To the Farmers of Md. and Va.
W. Whitelock & Co.—Vegetator.
Popplein Silicated Phos. Fert. Co.—Silicated Super-Phosphate.
A. G. Griffith—Great American Fertilizer.
Rev. R. H. Phillips—Virginia Female Institute.
H. M. Engle & Son—New Peaches.
W. W. Cobey—Cotswold Sheep.
L. J. Miller—Nonpareil Mills.
R. J. Baker & Co.—Pure Fertilizers.
R. J. Baker & Co.—Pure Super-phosphate.
P. Zell & Sons—Super-phosphate.
G. O. Brown—Good Birds for sale.
W. J.—Toulouse Geese wanted.
B. C. Bibb & Son—Stoves.
Griffith & Turner—Hagerstown Drill, &c.
J. C. Darborow—Drills, Threshers, &c.
F. Stockman—Plated Jewelry.
P. S. Chapell & Son—Fertilizers.
Jno. M. Rhodes & Co.—Standard Manures.
M. B. Seawell—Land Sale.

OXFORD, TALBOT CO., *July* 21, 1877.

J. J. TURNER & CO., BALTIMORE.

Gentlemen—In three fields, containing about 34 acres, I seeded last fall about 65 bushels of wheat. I used one ton of No. 1 Peruvian guano, a half ton of the Rectified Peruvian Guano (prepared by the Peruvian Government agents,) and one ton of your "Excelsior," 2½ tons in all. I used or sowed the Excelsior by itself, and I also mixed it equal parts with the Raw No. 1 Peruvian guano. After careful examination, I could not perceive any difference in the wheat where the Excelsior was sown by itself from where it was sown with the guano, nor could I perceive any difference in the effects of the Excelsior from that of the guanoes.

My crop was very satisfactory. I have threshed 1,040 bushels of wheat—about 30 bushels to the acre. Yours very respectfully,

JAS. H. LIGHTBOURNE.

EASTON, TALBOT CO., MD., *July* 20, 1877.

J. J. TURNER & Co.

Gentlemen—In answer to your inquiry about "Excelsior," I will state I have been using it for the past three years on wheat. The first year I used two other kinds in competition with it, the second year one other kind, last fall I used "Excelsior" exclusively, satisfied that it is the cheapest, although costing from five to eight dollars per ton more—one ton being equal to two tons of most other kinds.

In 1874 I sowed 48 bushels of wheat on 34½ acres; used 4 tons "Excelsior;" cut 680 bushels of wheat; corn ground sowed in clover; pastured last summer; a tremendous growth of clover. Put the same in wheat last fall, seeding 55 bushels on 34½ acres; used 225 pounds of "Excelsior" to the acre, and have just threshed 1,200 bushels of Fultz Wheat, being over 34 bushels to the acre.

As far as my experience and observation go, I think J. J. Turner & Co.'s "Excelsior" Fertilizer will make more wheat, straw and grass than any other fertilizer that comes to this country, and is the best I know of on our market, and shall use it again this fall. Very truly yours,

L. C. SMITH.

GREENFIELD FARM, PRINCE WILLIAM CO., VA.
July 20, 1877.

J. J. TURNER & Co., BALTIMORE:

Gents—It affords me pleasure to say that I have used the Excelsior with success. The quantity used never exceeded one hundred and fifty pounds per acre. I have used it each year since the war. I have also used other fertilizers by the side of it, but I frankly state the Excelsior has always been most satisfactory in its results. I will at least say that I am as much pleased with the Excelsior as with any fertilizer I ever used. I have realized on each application of this fertilizer fair and paying crops, on land which, without its use, I feel satisfied would not have paid me; and the effects on the succeeding crop of grass is all that can be desired. Especially is its good effects observable on a crop of timothy. Recommending the use of your fertilizer, and wishing you much success in its sale, I am, gentlemen, truly and respectfully yours,

JOHN REID.

LLOYDS, ESSEX CO., VA., *July* 16, 1877.

J. J. TURNER & Co.

Gents—I can truthfully say your "Excelsior" surpasses any fertilizer I have ever used on wheat, and I have used many different kinds. I have been using it for the past four years, and it has always given a yield of from twenty to twenty-five bushels per acre. I want four tons for my wheat this fall.

Very respectfully yours,

C. F. BAYLISS.

GLEN WELBY,
NEAR SALEM, FAUQUIER CO., VA.
July 23*d*, 1877.

MESSRS. J. J. TURNER & Co., BALTIMORE:

Gentlemen—I have used your "Excelsior" on wheat for the past ten years, generally about 150 pounds per acre; in every case it has given satisfaction.

Some years I have used it exclusively, and other years by the side of other popular fertilizers, and I feel sure that I award only justice to your "Excelsior," and no injustice to any other manufacturer, when I say, as the result of my experience and observation, that I regard yours as the safest and most reliable I have ever used or seen used in this region.

Its effects have always been remunerative to me, and as far as I could observe to those also who have used it in my neighborhood.

For several years past the droughts immediately after harvest have been severe, and as a consequence our clover has not stood well; but timothy sowed in the fall with wheat and "Excelsior" has invariably been a success,—the only drawback having been that the growth of timothy being stimulated by the fertilizer, was so rank as to somewhat impair the yield of wheat.

As long as the "Excelsior" measures up to its present standard, I am sure it must keep high rank, and command an extensive patronage wherever it is known.

Very respectfully yours,

RICHARD H. CARTER.

To the Farmers of Maryland and Virginia.

BALTIMORE, *July 25th*, 1877.

Following our usual custom, we had samples drawn by a disinterested party from stock of Excelsior and Ammoniated Phosphate, nearly 60,000 bags, representing our manufacture for the coming fall season, and handed Dr. G. A. Liebig, chemist of this city, and append his analyses, dated July 24th, 1877:

"EXCELSIOR."

Ammonia	6.20
Soluble Bone Phosphate of Lime	25.50
Undecomposed Bone Phosphate of Lime	6.20
Suphate of Potash (K. O. 1.56)	2.88

J. J. TURNER & CO.'S

AMMONIATED BONE SUPER-PHOSPHATE.

Ammonia	3.48
Soluble Bone Phosphate of Lime	26.36
Undecomposed Bone Phosphate of Lime	3.34
Sulphate of Potash (K. O. 1.09)	2.00

Our fertilizers are composed of the most concentrated materials,—High-Grade No. 1 Peruvian Guano, animal bones dissolved in sulphuric acid and potash,—and are richer in ammonia and soluble phosphates than any other sold in this market, and we offer them for sale at the commercial value of their constituents, that the farmer may know that he gets the worth of his money, viz:

"EXCELSIOR."

Ammonia, 6.20 per cent. @$3.50 per unit.	$21.70
Sol. Bone Phos. Lime, 25.50 per cent. @$1 per unit	25.50
Undecomposed Bone Phos. Lime, 6.20 per cent. @$0.20 per unit	1.24
Potash (K. O.) 1.56 per cent. @$1.50 per unit	2.34
Total	$50.78

PRICE $50 PER TON.

J. J. TURNER & CO.'S

AMMONIATED BONE SUPER-PHOSPHATE.

Ammonia, 3.48 per cent. @$3.50 per unit.	$12.18
Sol. Bone Phos. Lime, 26.36 per cent. @$1 per unit	26.36
Undecomposed Bone Phos. Lime, 3.34 per cent. @$0.20 per unit	.67
Potash (K. O.) 1.09 per cent. @$1.50 per unit	1.64
Total	$40.85

PRICE $40 PER TON.

We challenge competition in quality, mechanical condition and prices.

For the liberal patronage extended to us in the past we return our thanks, and assure our patrons that we will spare no efforts to merit a continuance for the future.

J. J. TURNER & CO.
No. 42 Pratt Street,
BALTIMORE, MD.

THE NEW SEEDLING PEACHES

Wilder, Saunders, and Downing. Centennial award granted. Earliest exhibited. *Trees and buds* **for sale.** H. M. ENGLE & SON, Marietta, Pa.

BERKSHIRES.

Sows and Boars of all ages, bred from imported stock, and at very moderate prices. For sale by
E. J. DURNALL,
"Street Road," Chester Co., Pa.

Maryland Agricultural College.

In pursuance of the terms of the Charter, the undersigned, holding in person or by proxy ONE-FOURTH OF THE STOCK in the corporation of the MARYLAND AGRICULTURAL COLLEGE, hereby call a Special Meeting of the Stockholders in the same for THURSDAY, August 9th, at 10½ A. M., at GUY'S HOTEL, Baltimore.

July 7, 1877.

A. B. DAVIS, GEO. H. CALVERT, JR.,
WM. N. CALVERT, WM. B. SANDS,
J. J. & F. TURNER, L. GIDDINGS.

NONPAREIL
FARM & FEED MILLS.
Bone, Drug, and Spice Mills. 10 sizes, for Hand or Power. Conical French Burr Stone Flouring and Corn Mills.
☞ Received the Grand Award Diploma and Medal at Centennial.
☞ Illustrated pamphlet sent Free. Address, L. J. MILLER,
101 E. Front St., Cincinnati, O.

COTSWOLD SHEEP.

By an imported Ram. For sale by

W. W. COBEY,
CROSS ROADS P. O.,
Charles Co., Md.

WANTED

TO PURCHASE SOME

TOULOUSE GEESE

to breed from. Letters addressed to W. J., care of this office, will receive prompt attention.

IMPORTANT TO FARMERS!

New Discovery!

Great American Fertilizer.

In presenting the claims of the "GREAT AMERICAN," I announce that it is the only method by which absolutely all the mineral and chemical properties of the best manure known, Horse manure, are concentrated and absolutely obtained, which, mixed with pure unadulterated raw bone, makes it the cheapest and best "Fertilizer" both chemically considered and by practical test, that the Farmer or Gardener can procure.

Independent of many certificates of the best results, I only ask Farmers and Truckers to try it side by side with any other, preferring that they select the best, and by this practical test let its merits stand or fall. It is quick, powerfully stimulating and rich in every element of plant food, yet permanent in enriching the soil.

☞ *Sold by the Manufacturer and Patentee,*

A. G. GRIFFITH,
At G. S. Griffith & Co.'s Carpet Store,
89 and 92 W. Baltimore Street.

Also by State Grangers' Agents, or at Factory, Fort Avenue, opposite Engine House.

PUBLIC SALE

OF

Land in Gloucester Co., Va.

Within a few Miles of Chesapeake Bay.

By virtue of a deed of trust made by George Hughes and wife, and duly recorded in the clerk's office of Gloucester Co., Va., and as commissioner appointed by a decree of the Circuit Court of said county, in the chancery suit therein defending in the name of John Prosser Tabb, &c., plaintiffs, against George Hughes, &c., defendants, the subscriber will sell, on Monday, the 1st day of October, 1877, (that being the County Court day) at public auction, at Gloucester Court House, that valuable, well-known, and very desirable Tract of Land in Gloucester County, called

WHITE MARSH.

the late residence of John Tabb, Esq., on which, at present, George Hughes resides,

Containing about 1,700 Acres,

mostly low grounds. This is one of the finest estates in Eastern Virginia, and has long been noted for its fertility and productiveness. All kinds of crops cultivated in Eastern Virginia grow well upon it, and it is the best farm for the cultivated grasses in the county, and perhaps in this section of the State,—large quantities of timothy and other kinds of hay having been gathered from it for years past. It is beautifully situated, and the products of the farm can be delivered from a landing on the place. The improvements are consistent with the value of the property, being first-class in every respect. The mansion house is of brick, large and commodious, with water, gas, and all modern conveniences. There are sufficient barns, stables, and all other necessary and convenient out-houses. There is running water in every field, and as a stock farm it is unsurpassed. For health it is unexceptionable. The neighborhood is remarkably good. Churches, schools and post-office in easy walking distance. Within a few hours travel (tri-weekly) of Baltimore and Richmond, by the Richmond, York River and Chesapeake Line, and of Norfolk by steamer "Banks," landing at Gloucester Point, where conveyance can always be had. The terms of sale will be for only a small proportion of the purchase money in cash, not exceeding $4,000, and for the balance a credit of one, two and three years in equal payments, bearing interest from the day of sale.

For the deferred payments, bonds with security will be required of the purchaser, to whom possession will be given when he shall have complied with the terms of sale.

Persons who may desire to purchase are invited to view the property before the day of sale, and to communicate with me,—my post-office being **Gloucester Court House, Va.**

M. B. SEAWELL,
au-tf **Trustee and Commissioner.**

SOUTHDOWNS.

Imported Ram "Prince Arthur," bred by Lord Walsingham, cost in England 60 guineas; also ten Yearling Rams and forty Ram and Ewe Lambs, sired by Prince Arthur, and ten Ewes sired by imported "Sir Henry" and "Prince Arthur." For sale by SAM. J. SHARPLESS.
705 Walnut St., Phila.

$200,000

GREATEST In order to clear out our stock of very superior Gold-plated Jewelry valued at over $200,000, we will send as below, 20 Pieces, all warranted Gold-plated, for $1.00. 1 pair Gold Stone Sleeve Buttons, 1 pair Engraved Sleeve Buttons, 1 set Pointed Studs, 1 set Amethyst Studs, 1

BARGAIN Wedding Ring, 1 Engraved Band Finger Ring, 1 Amethyst Stone Ring Inlaid with Gold, 1 Elegant Ring marked "Friendship," 1 Amethyst Stone Scarf Pin Inlaid with Gold, 1 Silvered Hat Pin, 1 set Ladies' Jet and Gold Pin and Drops, 1 Misses' set Jet and Gold, 1 Ladies' Jet Set Ornamented, 1 set Handsome Rosebud Ear Drops, 1

EVER Gents' Elegant Lake George Diamond Stud, 1 Cardinal Red Bead Necklace, 1 pair Ladies' Amethyst Stone Ear Drops, Inlaid with Gold, 1 Ladies' Ornamented Jet Brooch, 1 Fancy Scarf Ring and Elegant Watch Chain. TAKE YOUR CHOICE, THE ENTIRE LOT OF 20 PIECES, SENT POST-PAID FOR $1.00 OR ANY 3 PIECES YOU CHOOSE FOR 50 CENTS. NOW IS THE TIME TO MAKE MONEY. THESE

OFFERED CAN EASILY BE RETAILED AT $10.00.

F. STOCKMAN, 27 BOND St., New York.

"COTSWOLD SHEEP."

Rams and Ewes from best English stock, for sale at moderate prices. Address
C. J. B. MITCHELL,
jy-3t QUEENSTOWN, MD.

$55 to $77 a Week to Agents. Samples FREE. P. O. VICKERY, Augusta, Maine.

RIFLES, SHOT-GUNS, REVOLVERS,
sent C. O. D. For examination, all charges paid. No risk. No humbug. Write for catalogue. Address
GREAT WESTERN GUN WORKS, Pittsburgh, Pa.

RHODES'

Standard Manures!

PREPARED FOR ALL CROPS.

JNO. M. RHODES & CO.

80 SOUTH STREET, BALTIMORE.

P. S. CHAPPELL & SON,

MANUFACTURERS OF THE

Celebrated Wheat Fertilizers,

"CHAMPION," "CHALLENGE," "SOLUBLE FLOUR OF BONE," "AMMONIATED," "FARMER'S RELIANCE,"

Also, DISSOLVED BONE BLACK,
DISSOLVED BONE ASH,
AND ACID PHOSPHATE.

OFFICE, Cross Street, near Covington St., Baltimore.

VIRGINIA FEMALE INSTITUTE.

INCORPORATED 1844.

VIRGINIA

Female Institute,

STAUNTON, VA.

Rev. R. H. PHILLIPS, Rector, assisted by a full corps of Experienced Officers.

33d Annual Session

Will Begin Sept. 12, 1877.

Buildings spacious, with gas and hot and cold water. Heated by steam. Extensive grounds. PATRONIZED FROM NINETEEN STATES. **SCHOOL FIRST-CLASS. TERMS MODERATE.** Seven churches within three minutes' walk. For catalogue, address the Rector.

ESTABLISHED 1851.

BALTIMORE STOVE HOUSE.

This well-known resort still continues to keep up with the times, and offers for sale at
OLD-TIME CHEAP PRICES,

STOVES
OF EVERY VARIETY
FOR
COAL OR WOOD.

Furnaces,
RANGES,
AND
Caldrons.

Our patent **FIRE-PLACE HEATERS** still continue to grow in favor, and are used all over the United States. Most approved patterns and best workmanship always guaranteed. Special terms to Ministers, Churches and Schools. Give us a call or send for Circular.

B. C. BIBB & SON,

Successors to BIBB & CO.

INVENTORS, PATENTEES and MANUFACTURERS,

39 and 41 Light Street, Baltimore.

PURE
FERTILIZERS.

PURE FINE GROUND BONE,
STAG SUPER-PHOSPHATE OF LIME,
PURE DISSOLVED RAW BONE.

66° Oil Vitriol, German Potash Salts, Pure Chemicals for making Super-Phosphate at the lowest market price.

R. J. BAKER & CO.

36 and 38 CHARLES STREET,

BALTIMORE, MD.

For special terms to Grangers, apply to RUFFIN, SUTPHIN & CO., Richmond, Va.; JAS. P. MACHEN, Alexandria, Va.; H. O. DEVRIES, Baltimore, Md.

CRIFFITH & TURNER,

Manufacturers and Dealers in

Agricultural Implements and Machinery,

Garden and Field Seeds, Fertilizers, etc.

41 & 43 N. Paca St., Baltimore.

Would call especial attention to

"The Hagerstown Grain, Seed and Fertilizer Drill,"

as the most perfect of grain, seed and fertilizer sowers.

OUR MARYLAND CROP and FODDER CUTTERS, for hand and horse-power. THE CHAMPION RYE THRESHER, THRESHERS AND CLEANERS, SWEEP AND RAILWAY HORSE-POWERS, WHEAT FANS, CORN SHELLERS for hand and power, CORN AND COB CRUSHERS, PLOWS AND PLOW CASTINGS, HARROWS, CULTIVATORS, &c. Fertilizers of all kinds. A superior article of Ground Bone and material for manipulating fertilizers. FIELD AND GARDEN SEEDS OF ALL KINDS. ALL KINDS OF MACHINERY BUILT AND REPAIRED BY

GRIFFITH & TURNER,

41 and 43 N. Paca Street, Baltimore.

For Wheat.

THE POPPLEIN
Silicated Super-Phosphate.

PATENTED MARCH 31st, 1874.

Containing all the ingredients necessary for the full development of the crop to which it is applied.

Chemical Laboratory of the University of Pennsylvania,

West Philadelphia, June 25th, 1877.

W. Morris Orem, President

Popplein Silicated Phosphate Fertilizer Company, Baltimore, Md.

DEAR SIR:—The sample of your Fertilizer marked B. B. B., and sent to me for examination by authority of Mr. Thos. J. Edge, Secretary of the Pennsylvania State Board of Agriculture, was analyzed by me with the following results:

Soluble and Reverted Phosphoric Acid	10.34	per cent.
Insoluble Phosphoric Acid	1.74	"
Diatomaceous Silicic Acid	13.07	"
Potash	2.80	"

The value of one ton of 2,000 pounds of this Fertilizer is as follows:

206.8 lbs. of Soluble and Reverted Phosphoric Acid,	@10 cts.		$20.68
34.8 lbs. of Insoluble " "	@ 4 cts.		1.39
261.4 lbs. of Diatomaceous Silicic Acid,	@ 5 cts.		13.07
56.0 lbs. of Potash,	@ 7 cts.		3.92
			$39.06

Yours truly, **F. A. GENTH.**

We make separate and distinct compounds for tobacco, truck, cereals and cotton, based on the analysis of each plant, and have the exclusive right to use

VEGETABLE SILICA,

Of which Prof. F. A. Genth, of the University of Pennsylvania, says: "It is well known that Silica in such a condition has been the great lack of all fertilizers in the market. Since a long time I have been an advocate of the introduction of available Silica into artificial manures

With your fertilizer, you furnish the farmer with the most complete manure, containing all the elements, except those contained in the atmosphere, which are necessary for the full development and increase of grain, in wheat, corn, rye, oats, &c., and all crops which require Silica for their growth. Yours, truly, F. A. GENTH.

We solicit a trial with any other Fertilizer sold or used.

SEND FOR CIRCULARS.

THE POPPLEIN SILICATED PHOSPHATE FERTILIZER CO.

11 German Street, Baltimore, Md.

NOTICE TO WHEAT GROWERS.

ZELL'S

CELEBRATED AMMONIATED

BONE SUPER-PHOSPHATE.

Price $45 per Ton at Baltimore.

ZELL'S

ECONOMIZER,

Price $35 per Ton at Baltimore.

UNRIVALLED FOR THE WHEAT CROP.

P. ZELL & SONS, Manufacturers,

No. 30 South Street, Baltimore.

☞ FOR WHEAT CROPS.

R. J. BAKER & CO.'S

PURE SUPER-PHOSPHATES.

The Pure Dissolved RAW BONE is manufactured from our Pure Fine Ground Bone, and it is the best SUPER-PHOSPHATE in the market for wheat. We have the practical tests by Farmers for years.

☞ **Pure Chemicals for making SUPER-PHOSPHATE at the Lowest Market Price. Call at**

R. J. BAKER & CO.'S,

Nos. 36 and 38 South Charles Street

FOR SALE.

Boiler of 45 horse-power and Engine of 35 horse-power, with guages and governors,—used but little. Also Locomotive Boiler of 20-horse and Engine of 15-horse, in complete running order, will be sold low. Address L. H.,
Care Editors of *American Farmer*.

THE SOUTHERN POULTRY JOURNAL.

A handsomely illustrated MONTHLY published at Louisville, Ky.
DEVOTED EXCLUSIVELY TO POULTRY.
☞ Subscription $1 per year. SAMPLE COPIES 10 CTS.

TO ADVERTISERS

It offers unusual advantages. Its advertising rates are low, and, being the *ONLY PAPER IN THE SOUTH* devoted exclusively to Poultry, it will be found a splendid advertising medium, especially to Eastern and Western breeders who are desirous of selling their stock in the South. Agents wanted at once—liberal pay.
☞ Advertisements and correspondence solicited.
Address all letters to
Southern Poultry Journal Co.
P. O. Box 69, LOUISVILLE, KY.

BERKSHIRE PIGS.

The subscriber offers for sale a select lot of Berkshires of various ages, bred from stock imported by Hon. M. H. Cochran of Canada, T. S. Cooper and Chas. B. Moore of Pennsylvania, and other well known breeders.
Animals warranted true to description and pedigree, which will be furnished on application. Orders solicited and satisfaction guaranteed. Prices to suit the times.
THOS. J. LEA.
Brighton P. O., Montgomery Co., Md.

1877. SEED CATALOGUE and Circulars of Blooded Live Stock **FREE.** We offer **THE BEST** and **MOST RELIABLE** Garden, Field and Flower Seeds. 6 sample packages Farm Seeds free for two 3 cent stamps. BENSON & BURPEE, Seed Warehouse, 223 Church Street, Philadelphia, Pa.

The Farquhar Separator
(Warranted)
Penna. Agricultural Works.
York, Pa.
Lightest draft most durable, simplest, most economical and perfect in use. Wastes no grain, cleans it ready for market.
Steam Engines, Horse Powers and Threshers of all kinds. Also, Plough, Cultivators, &c., &c.
Send for Illustrated Catalogue.
Address A. B. Farquhar, York, Pa.

Threshers and Horse-powers of all kinds
A SPECIALTY.

MARYLAND WINES.

I offer for sale Ives, Concord and Clinton Wine at $5 per case of one dozen bottles, delivered at Express Office, or on cars or steamboat at Annapolis. Cases of one dozen, assorted to suit purchasers, at the same price. Families, invalids and others may rely on the purity of these Wines.
Address, L. GIDDINGS,
Severn Vineyard, Annapolis, Md.

Jersey Herd-Book Cattle for Sale.

The subscriber offer for sale the following choice stock:

3 Cows, fresh; 6 Heifers, 1 and 2 years old; 5 Heifer Calves; 2 Yearling Bulls; 2 Bull Calves. Apply to

W. H. PEROT,
25 S. Gay St., Baltimore.

U. G. MILLER & CO.

Ashland, Baltimore Co., Md.

Manufacturers of Plows, Harrows, Cultivators, Drags, Shovel Plows,

And Castings of every description made to order.

The Celebrated Oxford Plows Made to Order.

Repairs promptly attended to. A liberal discount made to those who purchase to sell again.
The patronage of the public is respectfully solicited, and we pledge ourselves to use every effort to render satisfaction.

FOR SALE.

BERKSHIRES!

OF THE

Best Strains of Blood.

Several imported BOARS and a number of imported SOWS used in the herd—among others would name SMYTHE-TO-WIT, first prize at Swindon, England; COMPTON, first at Harford Co. Show, 1876; the three LADIES PLYMOUTH, first at the Centennial; QUEEN OF LINDEN, first at Harford Co. Show, 1875 and 1876; also, OCTAVIA, LADY LINDEN, SARACEN CHIEF, and other prize-winners.

Pedigrees and further particulars furnished on application.

ALEX. M. FULFORD,
BELAIR, MD.

When writing, say where seen.

TO WHEAT GROWERS.

"EXCELSIOR,"

—1877.—

Composed of 800 lbs. of No. 1 Peruvian Guano, and 1,200 lbs. of Soluble Phosphate of Lime, (Bones dissolved in Sulphuric Acid) Potash and Soda.

Forming the most concentrated, universal and durable Fertilizer ever offered to the Farmer—combining all the stimulating qualities of Peruvian Guano, and the ever-durable fertilizing properties of Bones, in fine dry powder, prepared expresaly for drilling, and can be applied in any quantity, however small, per acre. It is the opinion of many close-calculating Farmers, after NINETEEN YEARS experience in testing it side by side with other popular fertilizers, that an application of 100 pounds of "Excelsior" is equal to 200 pounds of any other fertilizer or guano, and therefore fully 100 per cent. cheaper.

UNIFORMITY OF QUALITY GUARANTEED BY THE MANUFACTURERS.

☞Farmers should see that every bag is branded as above, with the ANALYSIS and our NAME in RED LETTERS. ALL OTHERS ARE COUNTERFEITS.

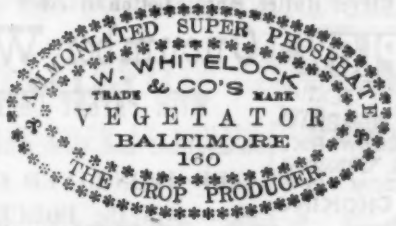
PRICE $50 PER TON.

J. J. TURNER & CO., 42 Pratt St., Baltimore.

Whitelock's Vegetator.

REDUCTION IN PRICE.

$3.50 PER BAG.



$3.50 PER BAG.

UNSURPASSED IN VALUE.

SURE TO PRODUCE A CROP.

NO REDUCTION IN QUALITY.

NO COMMON MATERIAL USED.

NOT EXHAUSTED BY THREE CROPPINGS.

☞We ask Farmers to test its value by the side of any Manure they may apply.

W. WHITELOCK & CO.

No. 44 South Street, Baltimore.

jy-4t

BUCKEYE MOWER and REAPER,

☞THE SIMPLEST, BEST MADE AND LIGHTEST DRAFT MACHINE ON THE MARKET. ONE-FOURTH OF THE MOWERS AND REAPERS MADE IN AMERICA ARE "BUCKEYE." THE "BUCKEYE" IS A FRONT-CUT MACHINE.

SWEEPSTAKES THRESHER AND CLEANER.

The most popular Thresher with Threshmen and Farmers. It never fails to do good work. A Threshman who buys a Sweepstake is sure of getting work for it, when those having other Threshers cannot.

ECLIPSE Agricultural ENGINE.

Best, Cheapest, and most Economical Engine in the Market.

Awarded first Premium at Cincinnati Exposition, 1874; Maryland State Agricultural Society, 1874; Silver Medal at Virginia State Agricultural Society, 1874; North Carolina State Fair, 1875, and others. Thoroughly warranted in every respect, and especially adapted to wants of Treshmen, Sawing Lumber, Farm Work, &c.

Circular Saw Mills, Wheel Horse Rake, Nonpareil Corn and Cob Mills, Perry's New York Hay Tedder, Mill Stones, Bolting Cloths, Eureka and other Smut Machines, Belting, Spindles, Mill Picks, Portable Farm and Grist Mills, Bickford & Huffman Grain and Fertilizer Drill, Birdsill Clover Huller, Hurdle Cotton Gin, &c.

THE WATT PLOW
UNEQUALLED IN EVERY ESSENTIAL
OF STRENGHT, DURABILITY,
PERFECT WORK,
LIGHT DRAUGHT,
FREEDOM FROM CHOKING
MEETS ALL THE WANTS OF THE PLANTER FOR THE CULTIVATION OF AN ENTIRE CROP.
WE SOLICIT A TRIAL, AND WARRANT EVERY PLOW
SEND FOR CATALOGUE AND PRICE-LIST.

Cucumber-Wood Pumps

WITH PATENT CAST-IRON CYLINDER,

Warranted not to cut out like the **GALVANIZED IRON-LINED CYLINDERS,** or scale off as will the **PORCELAIN-LINED CYLINDERS.**

Every Pump Provided with Patent Anti-Freezing Attachment.

THE BEST IS THE CHEAPEST.

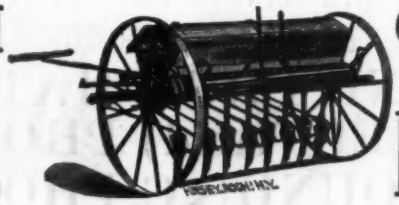
☞**Prices and Descriptive Circulars Furnished on Application, and Correspondence solicited from all wanting anything in my line.**

JOSHUA THOMAS, 53 Light St., Baltimore.

BICKFORD & HUFFMAN'S

FARMER'S FAVORITE.

MONARCH OF THE SEEDING.



CHAMPION OF THE Field Trials

Awarded the ONLY MEDAL given to a

"Grain and Seed Drill Combined"

BY THE CENTENNIAL COMMISSION.

Received the ONLY AWARD and MEDAL

A "Fertilizing Attachment"

WAS GIVEN AT PHILADELPHIA, 1876.

Southern Depot and Salesroom,

64 S. Sharp Street, Baltimore, Md.

HENRY P. UNDERHILL,

General Southern Agent.

ADDRESS AGENT for CIRCULARS and TERMS.

THE

Maryland Fertilizing and Manufacturing Co.

ARE PREPARED TO FURNISH FARMERS WITH THEIR

"AMMONIATED SUPER-PHOSPHATE,"

A COMPLETE MANURE FOR **ALL** CROPS.

PRICE $45 PER TON.

ALKALINE PHOSPHATE.
DISSOLVED (Acid) PHOSPHATE.
FINE GROUND S. C. PHOSPHATE.

J. EDWIN MYERS, Genl. Agent.

H. C. HOWARD, Secretary.

ap-6m **4 S. HOLLIDAY ST., BALTIMORE.**

Clairmont and Furley Hall Nursery.

ESTABLISHED 1828.

The largest stock and greatest variety of fruit and ornamental trees, foreign and domestic, to be found in the United States,—comprising apple, peach and pear trees, (standard and dwarf) evergreen and shade trees; all varieties of grape vines, currant, gooseberry, and blackberry bushes, strawberry plants, etc., etc.

TERMS TO SUIT THE TIMES.

Nursery is located on the Bel-Air Road, Baltimore County, and can be reached by way of Gay street.

WM. CORSE & SONS,

P. O. Box 248, BALTIMORE, MD.

jy-6m

THE "McGINNIS" CULTIVATOR

ON ENTIRELY NEW PRINCIPLES.

SEND FOR DESCRIPTIVE CIRCULAR OF

CULTIVATOR, HARROW AND LIME-SPREADER,

To DANNER & NEWMAN,

WOODSTOCK, VA.

Factory Established May 1st, 1839.

PURE

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Finely Ground and Free From all Adulteration.

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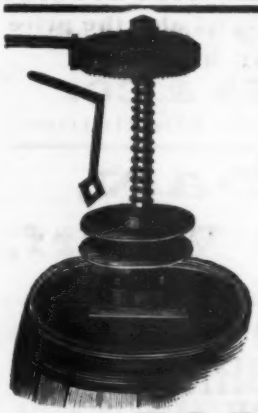

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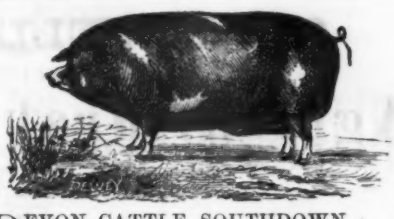

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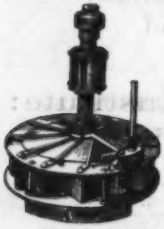

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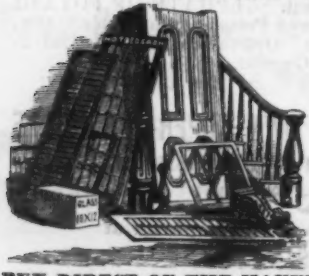

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